



CHA16(R)/CHA16H SERIES SINGLE PACKAGE AIR CONDITIONERS

*23,200 to 56,000 Btuh Cooling Capacity
12,600 to 85,300 Btuh Optional Electric Heat

*DOE and ARI Standard 210/240 Ratings

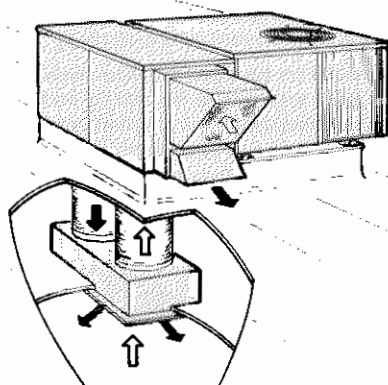
ENGINEERING DATA

COOLING UNITS

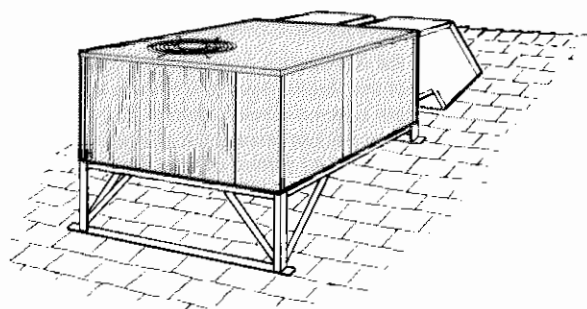
PACKAGED

Page 7

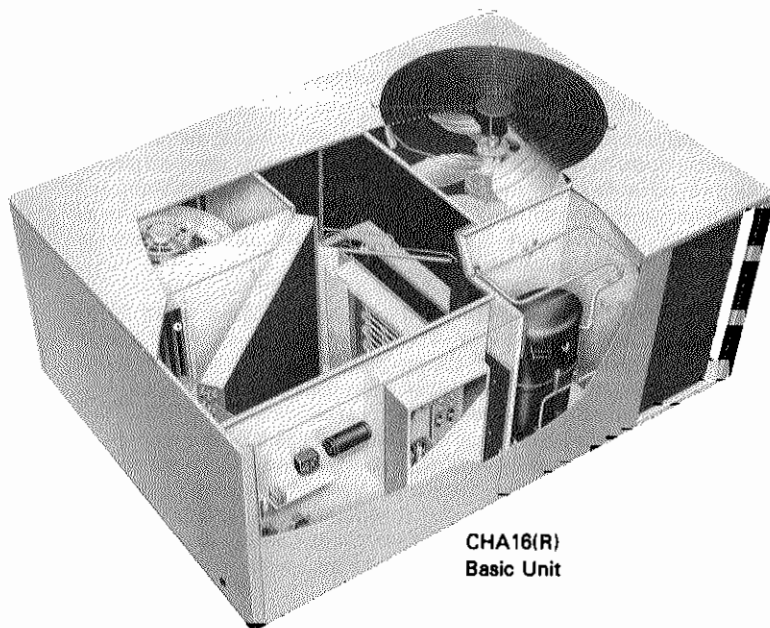
May 1990



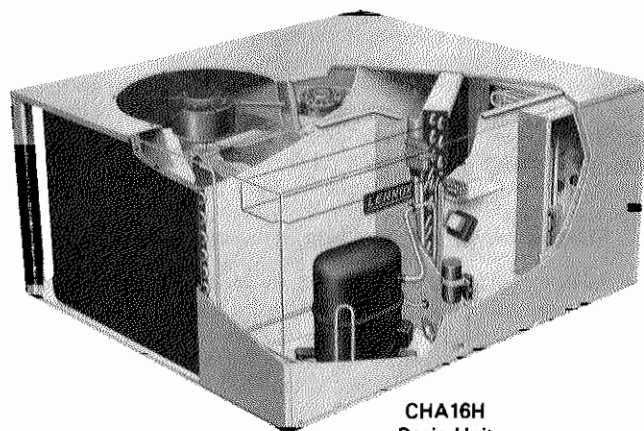
CHA16H Rooftop Installation With Combination
Supply and Return Air System



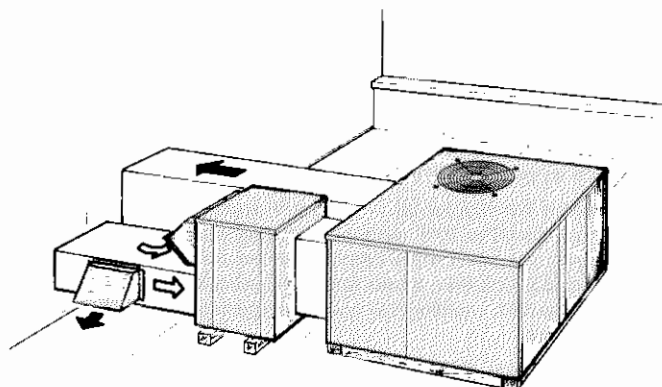
CHA16H Residential Rooftop Installation



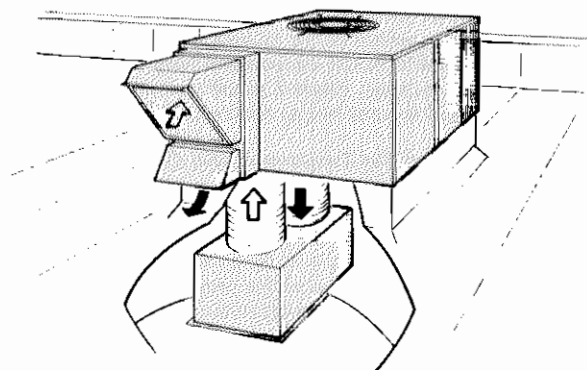
CHA16(R)
Basic Unit



CHA16H
Basic Unit



CHA16 Rooftop Installation
With Horizontal Economizer



CHA16 Rooftop Installation With Combination
Supply and Return Air System

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

©1990 Lennox Industries Inc.

FEATURES

Application — Lennox CHA16(R)/CHA16H single package air conditioning units are designed for outdoor rooftop or ground level installations in residential or light commercial applications. Units are capable of delivering bottom (down-flo) or side (horizontal) handling of supply and return air. CHA16(R) models are available in three models, single and three phase voltage with 34,000 to 56,000 Btuh cooling capacity. CHA16H models are available in two models, single phase voltage with 23,200 to 28,600 Btuh cooling capacity.

The CHA16-410-510-650 single and three phase voltage models are available with a choice of thermostat and related controls which include: electro-mechanical, W973, T7300, W7400 and Pro-stat. In addition a factory installed commercial controls platform consisting of: control system and economizer wiring harness is furnished as standard. The commercial controls platform and related control systems are not available on the CHA16R and CHA16H models.

Optional accessories include: electric heaters, lifting lug kit, condenser coil guards, down-flo filter adaptor kit, roof mounting frames, stand-off mounting kit, down-flo or horizontal economizer dampers with modulating or 3 position damper motor, step-down or flush ceiling supply and return air diffusers, duct enclosure (CHA16H models) and manual outdoor air dampers. See Specification tables.

Completely Tested and Certified — Units have been tested in the Lennox Research Laboratory environmental test room and rated according to Department of Energy (DOE) test procedures and in accordance with ARI Standard 210/240-89. In addition, units have been sound rated in the Lennox reverberant sound test room in accordance with ARI Standard 270-84. DOE covered products are rated under 65,000 Btuh with single and three phase power input. Units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and NEC. Optional electric heaters are U.L. 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.

Weather Resistant Cabinet — Rugged cabinet is constructed of heavy gauge galvanized steel. Cabinet is subject to a five station metal wash process resulting in a perfect bonding surface for the paint finish of powder enamel, electrostatically bonded to the metal. Large removable cabinet panels allow service access. Base section and cabinet panels exposed to conditioned air are lined with thick fiberglass insulation. Supply and return air openings have flanges for ease of duct connection. Control box with factory installed controls is conveniently located for service access. A low voltage terminal strip is furnished and factory installed with CHA16-410, 510 and 650 models. Electrical inlets are furnished for entry into the cabinet. Evaporator coil drain pan is constructed of corrosion resistant galvalume and is equipped with a galvanized pipe (mpt) drain outlet.

Refrigeration System — Complete factory sealed refrigeration system consists of: compressor, condenser coil and fan, evaporator coil and blower, liquid line strainer, suction and liquid line service gauge ports and full operating charge of refrigerant. CHA16(R)-510 and -650 models have an expansion valve and thermometer well. CHA16-410, 510 & 650 models have factory installed high pressure switch (manual reset), loss of charge switch and compressor crankcase heater.

Dependable and Quiet Compressor — Rugged and reliable compressor is hermetically sealed, suction cooled, overload protected and equipped with internal pressure relief valve. Built-in protection devices assure protection from excessive current and temperature. The entire running gear is spring mounted within the sealed housing. In addition, the compressor is installed in the unit on resilient rubber mounts assuring quiet and vibration free operation. CHA16 model compressors have a immersible self-regulating type crankcase heater. Heater is temperature actuated to operate only when required and ensures proper lubrication at all times.

Copper Tube/Enhanced Fin Evaporator and Condenser Coils — Extra large surface area and circuiting of Lennox designed coils provide maximum cooling efficiency, excellent heat transfer and low air resistance. Coils are constructed of precisely spaced ripple-edged aluminum fins fitted to durable copper tubes. Fins are equipped with collars that grip tubing for maximum contact area. Lanced fins provide maximum exposure of fin surface to air stream. Flared shoulder tubing connections and silver soldering provide tight, leakproof joints. Long life copper tubing is easy to field service. Coil is thoroughly factory tested under high pressure to insure leakproof construction. Evaporator coils feature rifled copper tubing for superior refrigerant flow resulting in maximum heat transfer.

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 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. All models are equipped with a corrosion resistant PVC coated steel wire fan guard.

Electric Heat (Optional) — Additive electric heaters field install internal to the unit cabinet and are available in several Kw sizes, see Electric Heat Data tables. Heaters are factory assembled with controls installed and wired. Low voltage wiring only requires plug-in field connection. Helix wound nichrome heating elements are exposed directly in the air stream resulting in instant heat transfer, low element temperatures and long service life.

ECH16R heating elements are equipped with accurately located individual limit controls with fixed temperature off setting and automatic reset. Elements also 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. ECH16R heaters are equipped with a thermal relay sequencer to bring the heating elements on and off line, in sequence, with a time delay between each element. Sequencer also initiates and terminates blower operation.

ECH16 heating elements are equipped with accurately located individual limit controls with fixed temperature off setting and automatic reset. Elements also have supplemental secondary limits providing positive protection in case of excessive temperatures. Secondary limits are mounted external to the element face plate for quick and easy replacement. Fuse block is also furnished. ECH16-20 and 25 Kw (208/240v-3ph) electric heaters are equipped with a thermal relay sequencer to bring the heating elements on and off line, in sequence, with a time delay between each element. Sequencer also initiates and terminates blower operation. Heating control relay(s) is furnished as standard. Heater control box and access cover are constructed of heavy gauge galvanized steel.

Outdoor Thermostat Kit (Optional) — An outdoor thermostat can be used to lock out some of the electric heating elements on ECH16-15, 20 and 25 Kw (208/240v-1ph) optional electric heaters. Outdoor thermostat maintains the heating load on the low power input as long as possible before allowing the full power load to come on the line. Thermostat kit (LB-29740BA) and mounting box (M-1595) must be ordered extra.

Air Filters (Not Furnished) — Filters for basic unit only applications must be provided by the installer for installation in the return air system exterior to the unit cabinet.

Commercial Controls Platform (CHA16 Models) — A commercial controls platform is furnished and factory installed on the CHA16-410-510-650 single and three phase voltage models. This control platform consists of: control system and economizer wiring harness with jack plug connections. The wiring harness facilitates installation of the control system and economizer dampers. A choice of several systems are available, see page 10.

Thermostat (Optional) — Thermostat is not furnished and must be ordered extra. CHA16H models require a two stage cooling thermostat with economizer damper applications. See Accessories section, page 13 and Lennox Price Book. For thermostat and related controls for the CHA16-410-510-650 single and three phase voltage models see page 10.

Low Ambient Kit (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 in the cooling mode is required at low ambients, a Low Ambient Control Kit (LB-57113BA) can be added in the field, enabling it to operate properly down to 0°F. Kit must be ordered extra.

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 CHA16H-261 & 311 and CHA16(R)-410 models, permitting the compressor to start in an unloaded condition. Automatic reset control provides a time delay between compressor shutoff and start-up.

FEATURES

Condenser Coil Guards (Optional) — PVC coated steel wire coil guards are available and must be ordered extra. CHA16H models require 2 guards per unit, LB-82199CD. CHA16(R)-410 models require 2 per unit, LB-82199CB. CHA16(R)-510-650 models require 3 per unit, LB-82199CC. Correct number of guards are furnished per order number.

Compressor Crankcase Heater (Optional) — Heater (P-8-8852) field installs on CHA16H and CHA16R models and must be ordered extra. Prevents migration of liquid refrigerant into the compressor and assures proper compressor lubrication. Heater is furnished as standard in compressor on the CHA16-410-510-650 single and three phase models.

RMF16 Roof Mounting Frame (Optional) — Roof mounting frame mates to the unit and provides a weather sealed rooftop installation. Shipped knocked down for ease of shipping and handling, it is easily field assembled. A wood nailer strip is secured to the frame sides to facilitate flashing. Design is approved by the National Roofing Contractor's Association. RMF16-31 is used with CHA16H-261 & 311 units. RMF16-41 may be used with all sizes of CHA16 models with slight overhang on the -510 and -650 models. RMF16-65 frame exactly matches the CHA16-510 & 650 models.

RDE16-31 Duct Enclosure (Optional for CHA16H Models Only) — The duct enclosure mounts to the CHA16H unit and RMF16-31 roof mounting frame. Included with duct enclosure is a unit mounting platform that mounts on top of the roof frame. Heavy gauge steel platform has support rails that elevate unit off the mounting surface. Duct enclosure is completely insulated with thick fiberglass insulation, has a baked-on enamel paint finish and is shipped factory assembled. Supply and return air openings 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 panel allows easy access to air filter. Also furnished with the enclosure is a wiring harness for use with optional economizer. Provisions have been made in the duct enclosure for easy field installation of the optional REMD16 economizer dampers.

REMD16 Economizer (Optional for CHA16H and CHA16 Models Only) — Field installed economizer slides in space provided in RDE16-31 Duct Enclosure for CHA16H models. Economizer field installs directly in CHA16 unit cabinets. See dimension drawings. Economizer consists of: cabinet constructed of heavy gauge steel with a baked-on enamel paint finish, outdoor air intake hood, combination outdoor air and recirculated air dampers with pressure operated gravity exhaust air damper. Formed damper blades rotate smoothly in nylon bearings and are gasketed for a 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 dampers is accomplished by a 24 volt three position spring return damper motor with adjustable minimum position switch 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 temperature and humidity are acceptable. A one-inch thick cleanable polyurethane filter is furnished. Filter rack will accept up to two-inch thick filter. Removable exhaust air hood allows access to filter. Outdoor air intake hood is field installed. A cleanable aluminum mesh frame filter in the outdoor air hood provides extra air filtering and bird screen protection.

REMD16M Economizer (Optional) — The REMD16M economizer damper section is identical to the REMD16 model except it is equipped with a fully modulating spring return damper motor. See Specifications table.

EMDH16 Horizontal Economizer (Optional for CHA16 Models Only) — 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 enamel paint finish, fully insulated with thick fiberglass insulation and 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 spring return damper motor with adjustable minimum position switch and controlled by the room thermostat, electronic discharge air sensor and solid-state adjustable outdoor air enthalpy control. The enthalpy controls 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 mesh frame filter in the outdoor air hood provides extra air filtering and bird screen protection.

EMDH16M Economizer (Optional) — The EMDH16M horizontal economizer damper section is identical to the EMDH16 model except it is equipped with a fully modulating spring return damper motor. See Specifications table.

GEDH16-65 Gravity Exhaust Dampers (Optional) — Available for use with EMDH16 horizontal economizer assembly. Pressure operated assembly field installs in the return air duct adjacent to the economizer assembly. Exhaust dampers also have bird screen.

Differential Enthalpy Control (Optional) — A solid-state return air enthalpy sensor is available to be used in conjunction with the outdoor air enthalpy control 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 REMD16 or EMDH16 economizer damper section and must be ordered extra.

OAD3-46/65 Manual Minimum Fresh Air Damper (Optional for CHA16H Models Only) — Fresh air damper field installs in the return air duct adjacent to the unit cabinet. Equipped with manually operated damper which will allow a fixed amount of outdoor air into the system.

OAD16 Manual Minimum Fresh Air Damper (Optional for CHA16(R) Models Only) — Built-in damper assembly is furnished in cabinet panel that field interchanges with existing blower access panel. Manually operated sliding damper allows entry of a fixed amount (0-25%) of outdoor air into the system. See dimension drawing. An outdoor air hood with cleanable filter media is also provided.

DF16 Down-Flo Filter Adaptor Kit (Optional for CHA16 Models Only) — Heavy gauge steel filter rails field install on down-flo return air opening. One-inch thick cleanable frame type filter is furnished as standard. Filter rails are designed to accept up to two-inch thick filter. Filter access is accomplished by removing unit blower access panel. See Specifications table for filter size.

Unit Single Point Power Source Sub-Fuse Box (Optional) — Field installs internal to the unit cabinet. Provides sub-fusing to the unit. Used in conjunction with the ECH16 electric heat control box or the ECH16R electric heat single point power source sub-fuse box, for single point power source applications. Fuses are furnished with box. Constructed of galvanized steel with prepunched mounting holes and electrical inlet and outlet holes. Box cover is hinged for easy access. Ten boxes are available, shipping weight 5 lbs. See Electric Heat Data tables for usage.

'R' Series Electric Heat Single Point Power Source Sub-Fuse Box (Optional) — Available for use with ECH16R electric heaters. Used in conjunction with ECH16 fuse box for single point power source applications. Field installs internal to the unit cabinet. Fuses are furnished with box. Box is constructed of galvanized steel with prepunched mounting holes and electrical inlet and outlet holes. Box cover is hinged for easy access. Three boxes are available, shipping weight 4 lbs. See Electric Heat Data tables for usage.

Roof Curb Power Entry Kit (Optional for CHA16 Models Only) — Field installed kit is available for power entry to the unit through the roof mounting frame. Kit contains 40-inch length of armored conduit and necessary installing hardware. Knockouts in end of roof mounting frame are provided for ease of installation. See dimension drawing. Two kits are required, one for low voltage and one for high voltage. Kits must be ordered extra. Three conduit sizes are available. Order Kit No. 18H70 (1/2-inch), 18H71 (1-inch), 18H72 (1-1/2-inch).

Lifting Lug Kit (Optional) — Field installed kit (LB-62125DA) facilitates handling and rigging of units. Reusable heavy gauge steel lifting lugs (4) are easily and quickly secured to units by means of a sliding steel pin. See dimension drawing for locations. Must be ordered extra.

Unit Stand-Off Mounting Kit (Optional) — Field installed kit (38H18) elevates horizontal application units above the mounting surface away from damaging moisture. Includes six high impact polystyrene stand-off mounts. Stand-offs are easily attached to unit and mounting surface. See dimension drawings. Kit must be ordered extra.

CHA16-411-413, CHA16-511-513 AND CHA16-651-653 CONTROL SYSTEM OPTIONS

Optional Electro-Mechanical Thermostat and Control 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 10a.

Optional PRO-STAT Thermostat and Control 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 outdoor air dampers closed during nite heat operation and morning warm up. See Flow Chart on page 10b.

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 economizer outdoor air dampers closed during nite heat operation and warm up. See Flow Chart on page 10a.

Optional W7400 Control System — Control system must be ordered extra for field installation. Control Module (74G11) 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 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 10b.

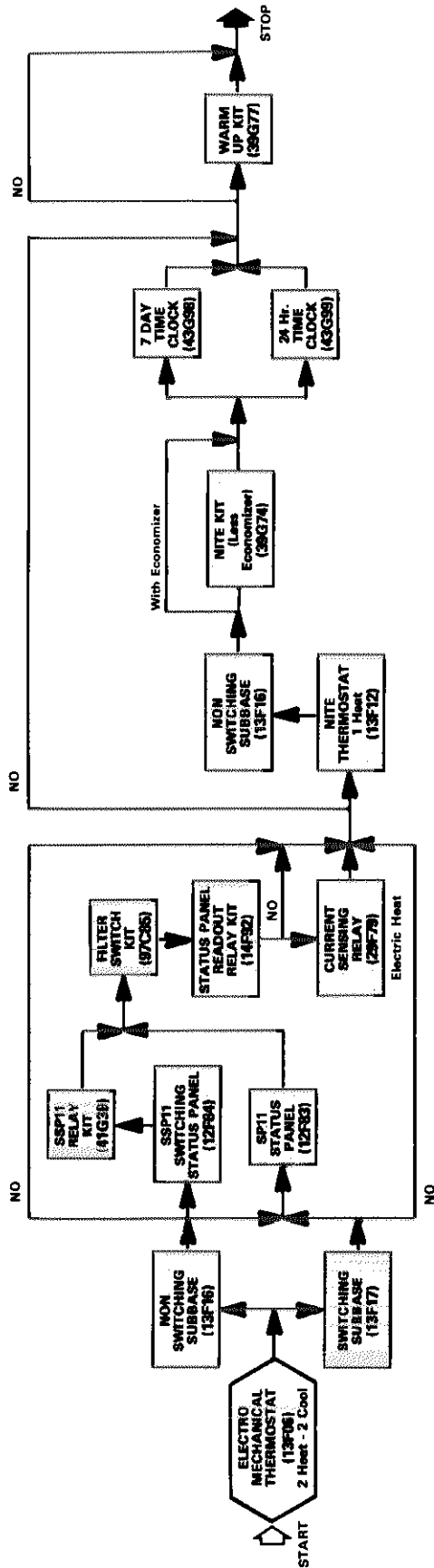
Optional T7300 Thermostat and Control System — The thermostat and related controls of this system must be ordered extra for field installation. T7300 programmable thermostat (81G59) has internal or optional remote temperature sensing, touch sensitive keyboard, automatic switching from heat to cool, °F or °C temperature readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time readout, stage status indicators, operational mode readout and battery back-up. T7300 thermostat has a choice of subbases. Switching subbase (81G60) has selectable output staging up to two heat and two cool, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On) and two status LED's for monitoring various equipment operation. Switching subbase (13H76) features selectable output staging up to three heat and two cool, indicator LED's, manual system switch (Auto-Cool-Off-Heat-Emergency Heat) (Heat Pump only) and fan switch (Auto-On). Both subbases also features an auxiliary relay output which controls economizer operation during occupied and unoccupied periods. Also available is a Room Temperature Sensor (58C92) or Room Temperature Sensor with 3-hour override and setpoint adjustment (86G67) for installation in the conditioned area and a Return Air Temperature Sensor (27C40) for installation in the return air duct of the unit. SP11 Status Panel (12F83) is available for checking unit operation from within the conditioned area. See Flow Chart on page 10b.

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 must be specified when ordering. Filter Switch Kit (97C85) is used 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.

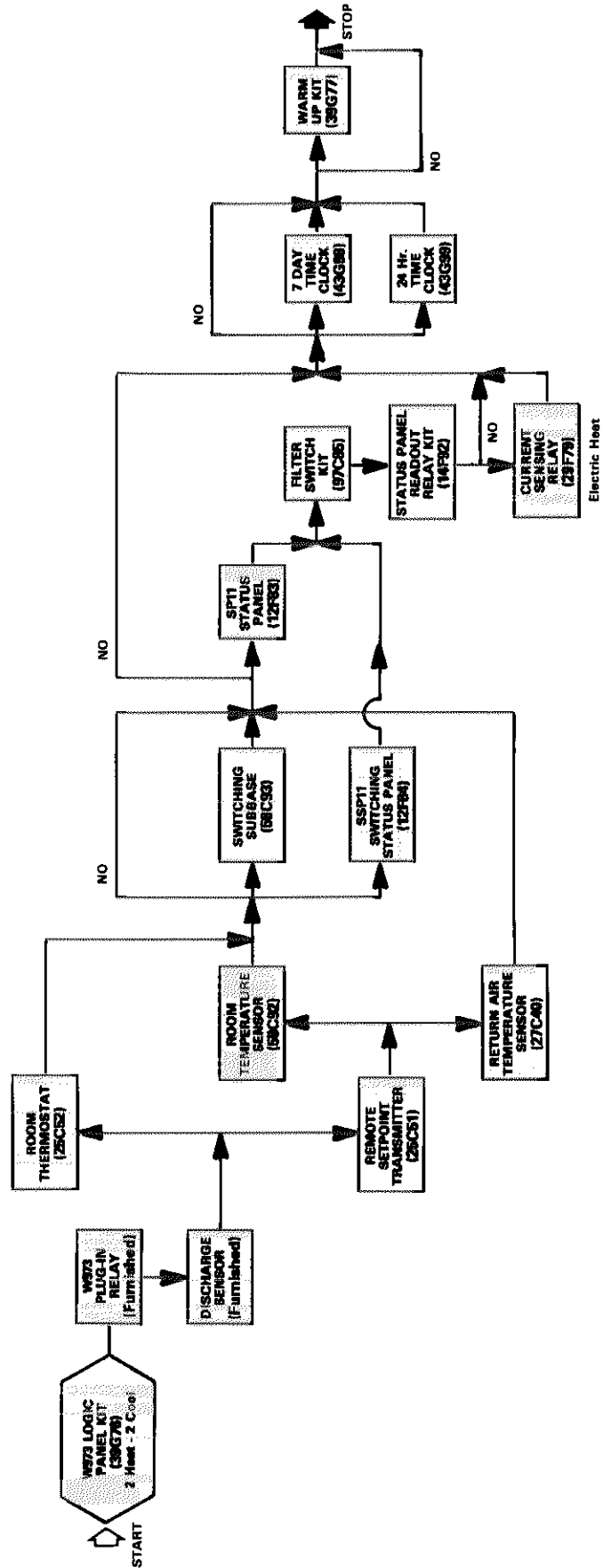
SSP11 Remote Switching Status Panel (Optional) — The operation of the unit can be controlled and observed on the Switching Status Panel (12F84) conveniently located within the conditioned area. Signal lights on the panel indicate "Cool Mode," "Heat Mode," "Compressor 1," "Compressor 2," "No Heat" and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

CHA16-411-413, CHA16-511-513 AND CHA16-651-653 MODELS ONLY TEMPERATURE CONTROL SELECTION FLOW CHARTS

OPTIONAL ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM

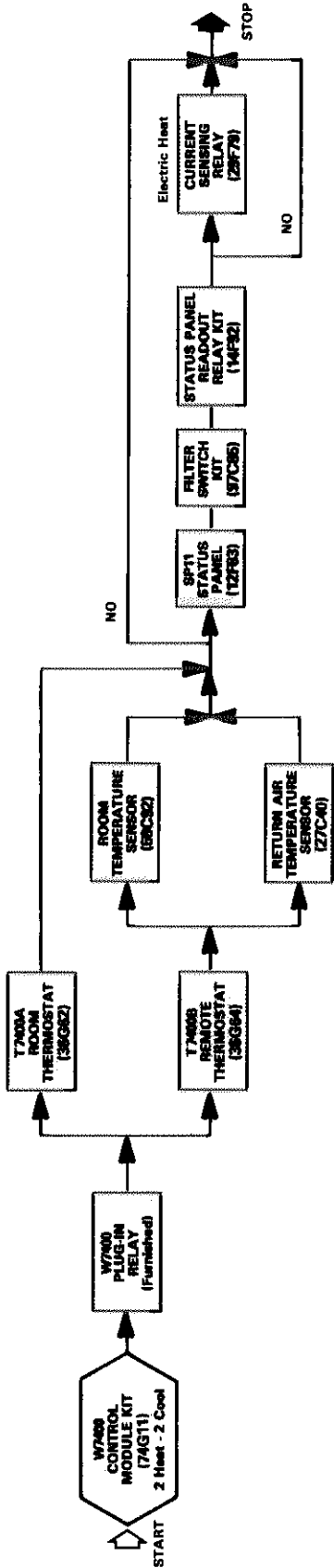


OPTIONAL W973 CONTROL SYSTEM

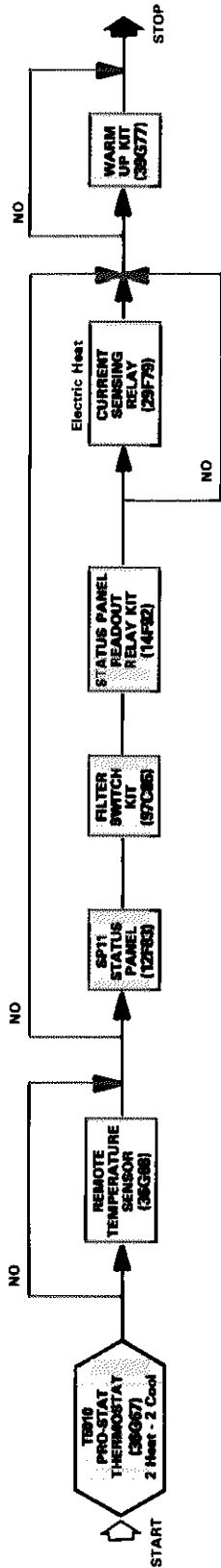


CHA16-411-413, CHA16-511-513 AND CHA16-651-653 MODELS ONLY
TEMPERATURE CONTROL SELECTION FLOW CHARTS

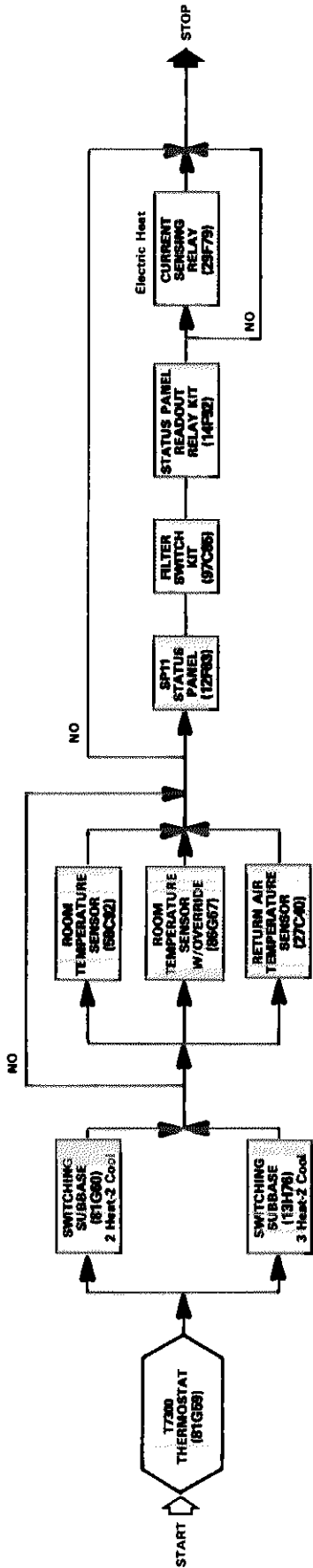
OPTIONAL W7400 CONTROL SYSTEM



OPTIONAL PRO-STAT THERMOSTAT CONTROL SYSTEM



OPTIONAL T7300 THERMOSTAT CONTROL SYSTEM



CHA16H-261-311 1 PHASE VOLTAGE MODELS SPECIFICATIONS

| Model No. | | | | CHA16H-261 | CHA16H-311 |
|---|---|----------------------|------------|---------------------------------|---------------|
| ★ARI Standard 270 SRN (bels) | | | | 7.8 | 7.8 |
| *ARI Standard 210/240 Ratings | Total cooling capacity (Btuh) | | | 23,200 | 28,600 |
| | Total unit watts | | | 2650 | 3250 |
| | SEER (Btuh/Watts) | | | 9.8 | 9.7 |
| | EER (Btuh/Watts) | | | 8.7 | 8.8 |
| Refrigerant (R-22) charge | | | | 2 lbs. 12 oz. | 3 lbs. 10 oz. |
| Evaporator Blower | Blower wheel nominal diameter x width (in.) | | | 9 x 7 | 9 x 8 |
| | Motor horsepower | | | 1/3 | 1/3 |
| Evaporator Coil | Net face area (sq. ft.) | | | 3.2 | 3.2 |
| | Tube diameter (in.) & Number of rows | | | 3/8 — 2 | 3/8 — 2 |
| | Fins per inch | | | 15 | 17 |
| Condenser Coil | Net face area (sq. ft.) | | | 6.8 | 6.8 |
| | Tube diameter (in.) & Number of rows | | | 3/8 — 1 | 3/8 — 1.6 |
| | Fins per inch | | | 20 | 20 |
| Condenser Fan | Diameter (in.) & Number of blades | | | 18 — 4 | 18 — 4 |
| | Air volume (cfm) | | | 2100 | 2000 |
| | Motor horsepower | | | 1/6 | 1/6 |
| | Motor watts | | | 200 | 160 |
| Condensate drain size mpt (in.) | | | | 3/4 | 3/4 |
| Net weight of basic unit (lbs.) | | | | 283 | 288 |
| Shipping weight of basic unit (lbs.) 1 package | | | | 354 | 358 |
| Electrical characteristics | | | | 208/230 volts — 60 hz — 1 phase | |
| Optional Electric Heat Ratings | ECH16R-5 | Output Btuh | | 19,000 | 19,000 |
| | | †A.F.U.E. | | 99.0% | 99.0% |
| | ECH16R-7 | Output Btuh | | 25,000 | 25,000 |
| | | †A.F.U.E. | | 99.0% | 99.0% |
| | ECH16R-10 | Output Btuh | | 35,000 | 35,000 |
| | | †A.F.U.E. | | 99.0% | 99.0% |
| | ECH16-15 | Output Btuh | | 52,000 | 52,000 |
| | | †A.F.U.E. | | 99.0% | 99.0% |
| Optional Lifting Lug Kit | | | | LB-62125DA | |
| Optional Condenser Coil Guards | | | | LB-82199CD | |
| Optional Outdoor Air Dampers (Manual) — (Net Weight) | | | | OAD3-46/65 (7 lbs.) | |
| Optional Duct Enclosure (Net Weight) | | | | RDE16-31 (94 lbs.) | |
| Number and size of filters (in.) | | | | (1) 20 x 20 x 1 (fiberglass) | |
| Optional Roof Mounting Frame — (Net Weight) | | | | RMF16-31 (80 lbs.) | |
| Optional ††Economizer Dampers with Gravity Exhaust | Model No. | 3 position (Net Wt.) | | REMD16-41 (48 lbs.) | |
| | | Modulating (Net Wt.) | | REMD16M-41 (48 lbs.) | |
| | Number and size of filters (in.) | Indoor | | (1) 14 x 25 x 1 (polyurethane) | |
| | | Outdoor | | (1) 14 x 25 x 1 (aluminum mesh) | |
| | | | | | |
| Optional Ceiling Supply and Return Air Diffusers (Net Weight) | | | Step-down | RTD9-65 (67 lbs.) | |
| | | | Flush | FD9-65 (37 lbs.) | |
| | | | Transition | SRTH16-65 (17 lbs.) | |

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

★Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210/240 and DOE; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air.

††Two stage cooling thermostat required with economizer applications.

CHA16R-411-511-651 1 PHASE VOLTAGE MODELS SPECIFICATIONS

| Model No. | | | CHA16R-411 | CHA16R-511 | CHA16R-651 |
|---|---|-------------|----------------------------------|----------------------------------|--------------|
| ★ARI Standard 270 SRN (bels) | | | 7.8 | 8.0 | 8.0 |
| *ARI Standard 210/240 Ratings | Total cooling capacity (Btuh) | | 34,000 | 46,500 | 56,000 |
| | Total unit watts | | 3910 | 5470 | 6665 |
| | SEER (Btuh/Watts) | | 9.6 | 9.5 | 9.4 |
| | EER (Btuh/Watts) | | 8.7 | 8.5 | 8.4 |
| Refrigerant (R-22) charge | | | 4 lbs. 12 oz. | 5 lbs. 9 oz. | 7 lbs. 0 oz. |
| Evaporator Blower | Blower wheel nominal diameter x width (in.) | | 10 x 7 | 10 x 8 | 12 x 8 |
| | Motor horsepower | | 1/3 | 1/2 | 3/4 |
| Evaporator Coil | Net face area (sq. ft.) | | 4.1 | 5.8 | 5.8 |
| | Tube diameter (in.) & Number of rows | | 3/8 — 2 | 3/8 — 2 | 3/8 — 2 |
| | Fins per inch | | 17 | 15 | 15 |
| Condenser Coil | Net face area (sq. ft.) | Outer coil | 8.6 | 14.3 | 14.3 |
| | | Inner coil | 8.4 | 5.9 | 13.8 |
| | Tube diameter (in.) & Number of rows | | 3/8 — 2 | 3/8 — 1.4 | 3/8 — 2 |
| | Fins per inch | | 20 | 20 | 20 |
| Condenser Fan | Diameter (in.) & Number of blades | | 20 — 4 | 24 — 4 | 24 — 4 |
| | Air volume (cfm) | | 2200 | 4000 | 3600 |
| | Motor horsepower | | 1/6 | 1/4 | 1/4 |
| | Motor watts | | 220 | 340 | 360 |
| Condensate drain size mpt (in.) | | | 3/4 | 3/4 | 3/4 |
| Net weight of basic unit (lbs.) | | | 338 | 438 | 473 |
| Shipping weight of basic unit (lbs.) 1 package | | | 402 | 533 | 568 |
| Electrical characteristics | | | 208/230 volts — 60 hz — 1 phase | | |
| Optional Electric Heat Ratings | ECH16R-5 | Output Btuh | 19,000 | ---- | ---- |
| | | †A.F.U.E. | 99.0% | ---- | ---- |
| | ECH16R-7 | Output Btuh | 26,000 | 27,000 | 27,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16R-10 | Output Btuh | 36,000 | 37,000 | 37,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-15 | Output Btuh | 53,000 | 54,000 | 54,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-20 | Output Btuh | 70,000 | 71,000 | 71,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-25 | Output Btuh | ---- | 88,000 | 88,000 |
| | | †A.F.U.E. | ---- | 99.0% | 99.0% |
| Optional Lifting Lug Kit | | | LB-62125DA | | |
| Optional Condenser Coil Guards | | | LB-82199CB | LB-82199CC | |
| Optional Outdoor Air Dampers (Manual) — (Net Weight) filter media size (in.) | | | OAD16-41 (12 lbs.) 5 x 17 x 1 | OAD16-65 (12 lbs.) 8 x 17 x 1 | |

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

★ Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210/240 and DOE; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air.

CHA16-411-511-651 1 PHASE VOLTAGE MODELS
CHA16-413-513-653 3 PHASE VOLTAGE MODELS
SPECIFICATIONS

| Model No. | | | CHA16-411 CHA16-413 | CHA16-511 CHA16-513 | CHA16-651 CHA16-653 |
|---|--|----------------------|--|--|------------------------|
| ★ARI Standard 270 SRN (bels) | | | 7.8 | 8.0 | 8.0 |
| *ARI Standard 210/240 Ratings | Total cooling capacity (Btuh) | | 34,000 | 46,500 | 56,000 |
| | Total unit watts | | 3910 | 5470 | 6665 |
| | SEER (Btuh/Watts) | | 9.6 | 9.5 | 9.4 |
| | EER (Btuh/Watts) | | 8.7 | 8.5 | 8.4 |
| Refrigerant (R-22) charge | | | 4 lbs. 12 oz. | 5 lbs. 9 oz. | 7 lbs. 0 oz. |
| Evaporator Blower | Blower wheel nominal diameter x width (in.) | | 10 x 7 | 10 x 8 | 12 x 8 |
| | Motor horsepower | | 1/3 | 1/2 | 3/4 |
| Evaporator Coil | Net face area (sq. ft.) | | 4.1 | 5.8 | 5.8 |
| | Tube diam. (in.) & No. of rows — Fins per inch | | 3/8 — 2 — 17 | 3/8 — 2 — 15 | 3/8 — 2 — 15 |
| Condenser Coil | Net face area (sq. ft.) | Outer coil | 8.6 | 14.3 | 14.3 |
| | | Inner coil | 8.4 | 5.9 | 13.8 |
| | Tube diam. (in.) & No. of rows — Fins per inch | | 3/8 — 2 — 20 | 3/8 — 1.4 — 20 | 3/8 — 2 — 20 |
| Condenser Fan | Diameter (in.) & Number of blades | | 20 — 4 | 24 — 4 | 24 — 4 |
| | Air volume (cfm) | | 2200 | 4000 | 3600 |
| | Motor horsepower — Motor watts | | 1/6 — 220 | 1/4 — 340 | 1/4 — 360 |
| Condensate drain size mpt (in.) | | | 3/4 | 3/4 | 3/4 |
| Net weight of basic unit (lbs.) | | | 338 | 438 | 473 |
| Shipping weight of basic unit (lbs.) 1 package | | | 402 | 533 | 568 |
| Electrical characteristics | | | 208/230v — 1 ph or 3 ph 460v — 3ph | | |
| Optional Electric Heat Ratings | ECH16R-5 | Output Btuh | 19,000 | ---- | ---- |
| | ECH16-5 | †A.F.U.E. | 99.0% | ---- | ---- |
| | ECH16R-7 | Output Btuh | 26,000 | 27,000 | 27,000 |
| | ECH16-7 | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16R-10 | Output Btuh | 36,000 | 37,000 | 37,000 |
| | ECH16-10 | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-15 | Output Btuh | 53,000 | 54,000 | 54,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-20 | Output Btuh | 70,000 | 71,000 | 71,000 |
| | | †A.F.U.E. | 99.0% | 99.0% | 99.0% |
| | ECH16-25 | Output Btuh | ---- | 88,000 | 88,000 |
| | | †A.F.U.E. | ---- | 99.0% | 99.0% |
| Optional Lifting Lug Kit | | | LB-62125DA | | |
| Optional Condenser Coil Guards | | | LB-82199CB | LB-82199CC | |
| Optional Down-flo Filter Adaptor Kit | Model No. | | DF16-41 | DF16-65 | |
| | Number and size of filters (in.) | | (1) 16 x 25 x 1 (polyurethane) | (1) 20 x 25 x 1 (polyurethane) | |
| Optional Outdoor Air Dampers (Manual) — (Net Weight) filter media size (in.) | | | OAD16-41 (12 lbs.) 5 x 17 x 1 | OAD16-65 (12 lbs.) 8 x 17 x 1 | |
| Optional Roof Curb Power Entry Kit (conduit size) | | | 18H70 (1/2") | 18H71 (1") | 18H72 (1-1/2") |
| Optional Roof Mounting Frame — (Net Weight) | | | RMF16-41 (75 lbs.) | RMF16-41 (75 lbs.) or RMF16-65 (86 lbs.) | |
| Optional Economizer Dampers with Gravity Exhaust | Model No. | 3 position (Net Wt.) | REMD16-41 (48 lbs.) | REMD16-65 (66 lbs.) | |
| | | Modulating (Net Wt.) | REMD16M-41 (48 lbs.) | REMD16M-65 (66 lbs.) | |
| | Number and size of filters (in.) | Indoor | (1) 14 x 25 x 1 (polyurethane) | (1) 18 x 25 x 1 (polyurethane) | |
| | | Outdoor | (1) 14 x 25 x 1 (aluminum mesh) | (1) 18 x 25 x 1 (aluminum mesh) | |
| Optional Horizontal Economizer Dampers | Model No. | 3 position (Net Wt.) | EMDH16-41 (110 lbs.) | EMDH16-65 (130 lbs.) | |
| | | Modulating (Net Wt.) | EMDH16M-41 (110 lbs.) | EMDH16M-65 (130 lbs.) | |
| | Number and size of filters (in.) | Indoor | (1) 20 x 24 x 1 (fiberglass) | (1) 16 x 25 x 1 & (1) 14 x 25 x 1 (fiberglass) | |
| | | Outdoor | (1) 8 x 24 x 1 (aluminum mesh) | (1) 8 x 28 x 1 (aluminum mesh) | |
| Optional Gravity Exhaust Dampers — (Net Weight) | | | GEDH16-65 (4 lbs.) Use with EMDH16 | | |
| Optional Ceiling Supply and Return Air Diffusers (Net Weight) | | Step-down | RTD9-65 (67 lbs.) | | |
| | | Flush | FD9-65 (37 lbs.) | | |
| | | Transition | SRT16-65 (20 lbs.) | | |
| Optional Controls Selection | | | Electro-Mechanical Thermostat Controls | | |
| | | | W973 Controls | | |
| | | | W7400 Controls | | |
| | | | Prostat Thermostat Controls | | |
| | | | T7300 Thermostat Controls | | |
| ††Commercial Controls Platform | | | Furnished and Factory Installed | | |

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

★Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210/240 and DOE; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air.

††Furnished as standard. Consists of: factory installed controls system and economizer wiring harness.

ELECTRICAL DATA

CHA16H-261-311 MODELS — SINGLE PHASE VOLTAGE

| Model No. | | CHA16H-261 | CHA16H-311 |
|---------------------------------------|-------------------|--------------------------|--------------------------|
| Line voltage data | | 60 hz — 1 ph 208/230v | 60 hz - 1 ph 208/230v |
| Compressor | Rated load amps | 12.1 | 13.5 |
| | Locked rotor amps | 57.0 | 77.4 |
| Condenser Fan Motor | Full load amps | .90 | .90 |
| | Locked rotor amps | 1.5 | 1.5 |
| Evaporator Blower Motor | Full load amps | 2.1 | 2.1 |
| | Locked rotor amps | 4.6 | 4.6 |
| *Recommended maximum fuse size (amps) | | 30 | 30 |
| Unit power factor | | .99 | .95 |
| *Minimum Circuit Ampacity | | 19.0 | 20.0 |

• Where current does not exceed 60 amps, HACR circuit breaker may be used in place of fuse.

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

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

CHA16(R)-411-511-651 MODELS — SINGLE PHASE VOLTAGE

| Model No. | | CHA16(R)-411 | CHA16(R)-511 | CHA16(R)-651 |
|---------------------------------------|-------------------|--------------------------|--------------------------|--------------------------|
| Line voltage data | | 60 hz — 1 ph 208/230v | 60 hz - 1 ph 208/230v | 60 hz - 1 ph 208/230v |
| Compressor | Rated load amps | 17.9 | 23.4 | 27.6 |
| | Locked rotor amps | 83.5 | 118.0 | 135.0 |
| Condenser Fan Motor | Full load amps | 1.1 | 2.3 | 2.3 |
| | Locked rotor amps | 2.2 | 4.4 | 4.4 |
| Evaporator Motor | Full load amps | 3.0 | 3.9 | 4.6 |
| | Locked rotor amps | 6.2 | 8.3 | 10.0 |
| *Recommended maximum fuse size (amps) | | 40 | 50 | 60 |
| Unit power factor | | .95 | .92 | .97 |
| *Minimum Circuit Ampacity | | 27.0 | 36.0 | 42.0 |

• Where current does not exceed 60 amps, HACR circuit breaker may be used in place of fuse.

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

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

CHA16-413-513-653 MODELS — THREE PHASE VOLTAGE

| Model No. | | CHA16-413 | | CHA16-513 | | CHA16-653 | |
|---------------------------------------|-------------------|--------------|------|--------------|------|--------------|------|
| Line voltage data | | 60 hz — 3 ph | | 60 hz — 3 ph | | 60 hz — 3 ph | |
| | | 208/230v | 460v | 208/230v | 460v | 203/230v | 460v |
| Compressor | Rated load amps | 11.3 | 5.2 | 15.4 | 8.4 | 17.7 | 9.4 |
| | Locked rotor amps | 66.0 | 35.0 | 90.0 | 45.0 | 105.0 | 55.0 |
| Condenser Fan Motor (1 phase) | Full load amps | 1.1 | 0.7 | 2.3 | 1.1 | 2.3 | 1.1 |
| | Locked rotor amps | 2.2 | 1.3 | 4.4 | 2.0 | 4.4 | 2.0 |
| Evaporator Blower Motor (1 phase) | Full load amps | 3.0 | 1.8 | 3.9 | 1.8 | 4.6 | 1.8 |
| | Locked rotor amps | 6.2 | 4.4 | 8.3 | 4.4 | 10.0 | 3.8 |
| *Recommended maximum fuse size (amps) | | 25 | 15 | 40 | 20 | 45 | 20 |
| Unit power factor | | .86 | .87 | .88 | .88 | .89 | .89 |
| *Minimum Circuit Ampacity | | 19.0 | 9.0 | 26.0 | 14.0 | 30.0 | 15.0 |

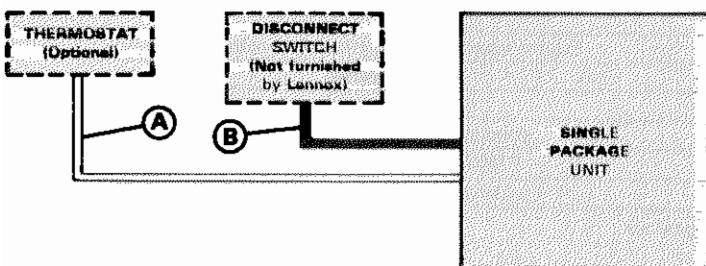
• Where current does not exceed 60 amps, HACR circuit breaker may be used in place of fuse.

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

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

FIELD WIRING

CHA16H-261-311, CHA16(R)-410, CHA16(R)-510 AND CHA16(R)-650 MODELS



A — *Four Wire Low Voltage (Electromechanical)

— *Five Wire Low Voltage (Electronic)

*When Economizer with two stage cooling thermostat are used with CHA16H, one additional wire is required

B — Two or Three Wire Power (See Electrical Data Table)

— Field wiring not furnished —

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

FIELD WIRING

CHA16-411-413, CHA16-511-513 AND CHA16-651-653 MODELS ONLY

W973 CONTROL SYSTEM

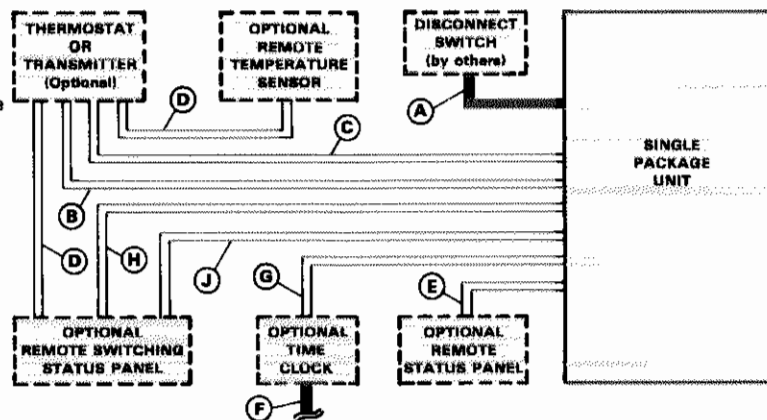
- A — Two or Three wire power (See Electrical Data table)
- B — Seven wire low voltage — DC only
- Five wire low voltage — DC only — with SSP11 Switching Status Panel
- Seven wire low voltage — DC only — with switching subbase
- C — Two wire low voltage — AC only — with switching subbase
- D — Two wire low voltage — DC only
- E — Nine wire low voltage — AC only
- F — Two wire low voltage — AC only
- G — Two wire low voltage — AC only
- H — Thirteen wire low voltage — AC only
- J — Two wire low voltage — DC only

AC — Alternating current
DC — Direct current

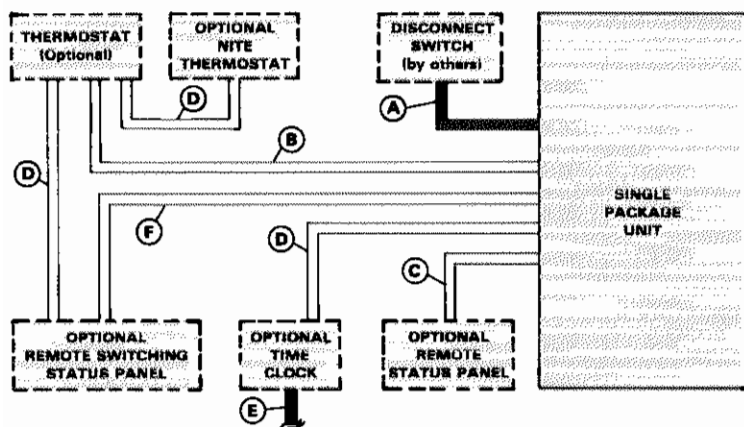
NOTE — Run separate harnesses for AC and DC.
AC voltage interferes with DC signals.

— Field wiring not furnished —

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



ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



- A — Two or Three wire power (See Electrical Data table)
- B — Six wire low voltage
- Five wire low voltage (with SSP11 Switching Status Panel)

- C — Nine wire low voltage
- D — Two wire low voltage
- E — Two wire low voltage
- F — Sixteen wire low voltage

— Field wiring not furnished —

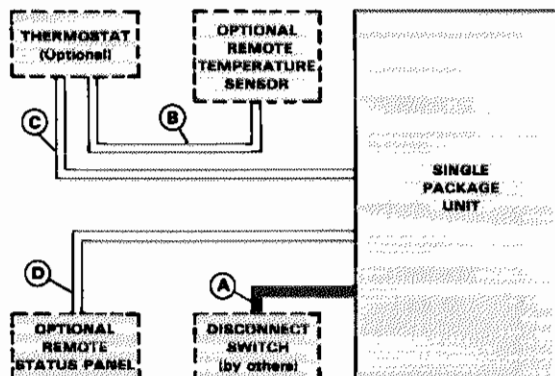
NOTE — All wiring must conform to NEC and local electrical codes.

W7400 CONTROL SYSTEM

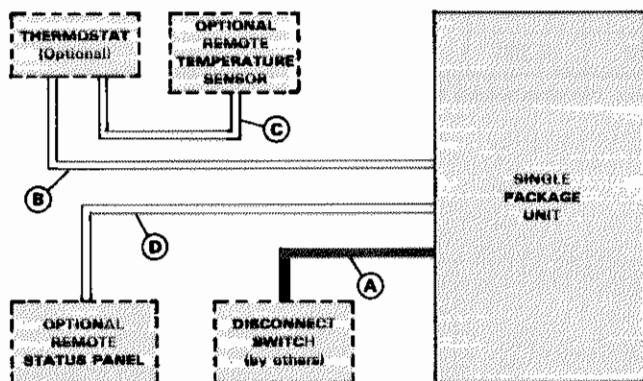
- A — Two or Three wire power (See Electrical Data table)
- B — Two wire low voltage
- C — Four wire low voltage
- D — Nine wire low voltage

— Field wiring not furnished —

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



PRO-STAT OR T7300 THERMOSTAT CONTROL SYSTEM



- A — Two or Three wire power (See Electrical Data table)
- B — Seven wire low voltage (Pro-Stat)
- Nine wire low voltage (T7300)
- C — Two wire low voltage
- D — Nine wire low voltage

— Field wiring not furnished —

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

CHA16H-261 & CHA16H-311 ELECTRIC HEAT DATA

| Single Package Unit Model No. | Electric Heater Model No. & Net Weight | No. of Steps & Phase | Volts Input | Heater only *Minimum Circuit Ampacity | Electric Heat Kw Input | Electric Heat Btuh Input | Optional Single Point Power Source Boxes | | |
|-------------------------------|--|----------------------|-------------|---------------------------------------|------------------------|--------------------------|--|-------------------|--|
| | | | | | | | Heater Sub-Fuse Box | Unit Sub-Fuse Box | Total Unit & Electric Heat *Minimum Circuit Ampacity |
| CHA16H-261 | ECH16R-5 (4 lbs.) | 1 step (1 phase) | 208 | 22.5 | 3.7 | 12,600 | ECH16R-26/41-5 | ECH16-261 | 25.1 |
| | | | 220 | 23.9 | 4.2 | 14,300 | | | 26.5 |
| | | | 230 | 24.9 | 4.6 | 15,700 | | | 27.5 |
| | | | 240 | 26.0 | 5.0 | 17,100 | | | 28.6 |
| | ECH16R-7 (5 lbs.) | 1 step (1 phase) | 208 | 31.6 | 5.3 | 18,100 | ECH16R-26/65-7 | ECH16-261 | 34.3 |
| | | | 220 | 33.5 | 5.9 | 20,100 | | | 36.1 |
| | | | 230 | 35.0 | 6.4 | 21,800 | | | 37.6 |
| | | | 240 | 36.5 | 7.0 | 23,900 | | | 39.1 |
| | ECH16R-10 (5 lbs.) | 1 step (1 phase) | 208 | 45.1 | 7.5 | 25,600 | ECH16R-26/65-10 | ECH16-261 | 47.8 |
| | | | 220 | 47.8 | 8.4 | 28,700 | | | 50.4 |
| | | | 230 | 50.0 | 9.2 | 31,400 | | | 52.6 |
| | | | 240 | 52.1 | 10.0 | 34,100 | | | 54.8 |
| | ECH16-15 (18 lbs.) | 1 step (1 phase) | 208 | 67.8 | 11.3 | 38,600 | ---- | ECH16-261 | 70.4 |
| | | | 220 | 71.6 | 12.6 | 43,000 | | | 74.3 |
| | | | 230 | 74.9 | 13.8 | 47,100 | | | 77.5 |
| | | | 240 | 78.1 | 15.0 | 51,200 | | | 80.8 |
| CHA16H-311 | ECH16R-5 (4 lbs.) | 1 step (1 phase) | 208 | 22.5 | 3.7 | 12,600 | ECH16R-26/41-5 | ECH16-311 | 25.1 |
| | | | 220 | 23.9 | 4.2 | 14,300 | | | 26.5 |
| | | | 230 | 24.9 | 4.6 | 15,700 | | | 27.5 |
| | | | 240 | 26.0 | 5.0 | 17,100 | | | 28.6 |
| | ECH16R-7 (5 lbs.) | 1 step (1 phase) | 208 | 31.6 | 5.3 | 18,100 | ECH16R-26/65-7 | ECH16-311 | 34.3 |
| | | | 220 | 33.5 | 5.9 | 20,100 | | | 36.1 |
| | | | 230 | 35.0 | 6.4 | 21,800 | | | 37.6 |
| | | | 240 | 36.5 | 7.0 | 23,900 | | | 39.1 |
| | ECH16R-10 (5 lbs.) | 1 step (1 phase) | 208 | 45.1 | 7.5 | 25,600 | ECH16R-26/65-10 | ECH16-311 | 47.8 |
| | | | 220 | 47.8 | 8.4 | 28,700 | | | 50.4 |
| | | | 230 | 50.0 | 9.2 | 31,400 | | | 52.6 |
| | | | 240 | 52.1 | 10.0 | 34,100 | | | 54.8 |
| | ECH16-15 (18 lbs.) | 1 step (1 phase) | 208 | 67.8 | 11.3 | 38,600 | ---- | ECH16-311 | 70.4 |
| | | | 220 | 71.6 | 12.6 | 43,000 | | | 74.3 |
| | | | 230 | 74.9 | 13.8 | 47,100 | | | 77.5 |
| | | | 240 | 78.1 | 15.0 | 51,200 | | | 80.8 |

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

CHA16(R)-411-413 ELECTRIC HEAT DATA

| Single Package Unit Model No. | Electric Heater Model No. & Net Weight | No. of Steps & Phase | Volts Input | Heater only *Minimum Circuit Ampacity | Electric Heat Kw Input | Electric Heat Btuh Input | Optional Single Point Power Source Boxes | | |
|-------------------------------|--|----------------------|-------------|---------------------------------------|------------------------|--------------------------|--|-------------------|--|
| | | | | | | | Heater Sub-Fuse Box | Unit Sub-Fuse Box | Total Unit & Electric Heat *Minimum Circuit Ampacity |
| CHA16-411 CHA16R-411 | ECH16R-5 (4 lbs.) | 1 step (1 phase) | 208 | 22.5 | 3.7 | 12,600 | ECH16R-26/41-5 | ECH16-411 | 26.3 |
| | | | 220 | 23.9 | 4.2 | 14,300 | | | 27.6 |
| | | | 230 | 24.9 | 4.6 | 15,700 | | | 28.6 |
| | | | 240 | 26.0 | 5.0 | 17,100 | | | 29.8 |
| | ECH16R-7 (5 lbs.) | 1 step (1 phase) | 208 | 31.6 | 5.3 | 18,100 | ECH16R-26/65-7 | ECH16-411 | 35.4 |
| | | | 220 | 33.5 | 5.9 | 20,100 | | | 37.3 |
| | | | 230 | 35.0 | 6.4 | 21,800 | | | 38.8 |
| | | | 240 | 36.5 | 7.0 | 23,900 | | | 40.3 |
| | ECH16R-10 (5 lbs.) | 1 step (1 phase) | 208 | 45.1 | 7.5 | 25,600 | ECH16R-26/65-10 | ECH16-411 | 48.9 |
| | | | 220 | 47.8 | 8.4 | 28,700 | | | 51.5 |
| | | | 230 | 50.0 | 9.2 | 31,400 | | | 53.8 |
| | | | 240 | 52.1 | 10.0 | 34,100 | | | 55.9 |
| | ECH16-15 (18 lbs.) | 1 step (1 phase) | 208 | 67.8 | 11.3 | 38,600 | ---- | ECH16-411 | 71.5 |
| | | | 220 | 71.6 | 12.6 | 43,000 | | | 75.4 |
| | | | 230 | 74.9 | 13.8 | 47,100 | | | 78.6 |
| | | | 240 | 78.1 | 15.0 | 51,200 | | | 81.9 |
| | ECH16-20 (19 lbs.) | 1 step (1 phase) | 208 | 90.3 | 15.0 | 51,200 | ---- | ECH16-411 | 94.0 |
| | | | 220 | 95.5 | 16.8 | 57,300 | | | 99.3 |
| | | | 230 | 99.8 | 18.4 | 62,800 | | | 103.5 |
| | | | 240 | 104.1 | 20.0 | 68,300 | | | 107.9 |
| CHA16-413 | ECH16-5 (17 lbs.) | 1 step (3 phase) | 208 | 13.0 | 3.7 | 12,600 | ---- | ECH16-413 | 16.8 |
| | | | 220 | 13.8 | 4.2 | 14,300 | | | 17.5 |
| | | | 230 | 14.4 | 4.6 | 15,700 | | | 18.1 |
| | | | 240 | 15.0 | 5.0 | 17,100 | | | 18.8 |
| | ECH16-7 (17 lbs.) | 1 step (3 phase) | 208 | 18.3 | 5.3 | 18,100 | ---- | ECH16-413 | 22.0 |
| | | | 220 | 19.3 | 5.9 | 20,100 | | | 23.0 |
| | | | 230 | 20.1 | 6.4 | 21,800 | | | 23.9 |
| | | | 240 | 21.0 | 7.0 | 23,900 | ---- | ECH16-413 | 24.8 |
| | | | 440 | 9.6 | 5.8 | 19,800 | | | 11.9 |
| | | | 460 | 10.1 | 6.5 | 22,200 | | | 12.4 |
| | ECH16-10 (17 lbs.) | 1 step (3 phase) | 480 | 10.5 | 7.0 | 23,900 | ---- | ECH16-413 | 12.8 |
| | | | 208 | 26.1 | 7.5 | 25,600 | | | 29.9 |
| | | | 220 | 27.6 | 8.4 | 28,700 | ---- | ECH16-413 | 31.4 |
| | | | 230 | 28.9 | 9.2 | 31,400 | | | 32.6 |
| | | | 240 | 30.1 | 10.0 | 34,100 | | | 33.9 |
| | | | 440 | 13.8 | 8.4 | 28,700 | ---- | ECH16-413 | 16.0 |
| | ECH16-15 (17 lbs.) | 1 step (3 phase) | 460 | 14.4 | 9.2 | 31,400 | | | 16.6 |
| | | | 480 | 15.0 | 10.0 | 34,100 | | | 17.3 |
| | | | 208 | 39.1 | 11.3 | 38,600 | ---- | ECH16-413 | 42.9 |
| | | | 220 | 41.4 | 12.6 | 43,000 | | | 45.1 |
| | | | 230 | 43.2 | 13.8 | 47,100 | | | 47.0 |
| | | | 240 | 45.1 | 15.0 | 51,200 | ---- | ECH16-413 | 48.9 |
| | ECH16-20 (20 lbs.) | 2 steps (3 phase) | 440 | 20.6 | 12.6 | 43,000 | | | 22.9 |
| | | | 460 | 21.6 | 13.8 | 47,100 | ---- | ECH16-413 | 23.9 |
| | | | 480 | 22.5 | 15.0 | 51,200 | | | 24.8 |
| | | | 208 | 52.1 | 15.0 | 51,200 | ---- | ECH16-413 | 55.9 |
| | | | 220 | 55.1 | 16.8 | 57,300 | | | 58.9 |
| | | | 230 | 57.6 | 18.4 | 62,800 | | | 61.4 |
| | | | 240 | 60.1 | 20.0 | 68,300 | ---- | ECH16-413 | 63.9 |
| | | | 440 | 27.6 | 16.8 | 57,300 | | | 29.9 |
| | | | 460 | 28.9 | 18.4 | 62,800 | | | 31.1 |
| | | | 480 | 30.1 | 20.0 | 68,300 | | | 32.4 |

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

CHA16(R)-511-513 ELECTRIC HEAT DATA

| Single Package Unit Model No. | Electric Heater Model No. & Net Weight | No. of Steps & Phase | Volts Input | Heater only *Minimum Circuit Ampacity | Electric Heat Kw Input | Electric Heat Btuh Input | Optional Single Point Power Source Boxes | | |
|-------------------------------|--|----------------------|-------------|---------------------------------------|------------------------|--------------------------|--|-------------------|--|
| | | | | | | | Heater Sub-Fuse Box | Unit Sub-Fuse Box | Total Unit & Electric Heat *Minimum Circuit Ampacity |
| CHA16-511 CHA16R-511 | ECH16R-7 (5 lbs.) | 1 step (1 phase) | 208 | 31.6 | 5.3 | 18,100 | ECH16R-26/65-7 | ECH16-511 | 36.5 |
| | | | 220 | 33.5 | 5.9 | 20,100 | | | 38.4 |
| | | | 230 | 35.0 | 6.4 | 21,800 | | | 39.9 |
| | | | 240 | 36.5 | 7.0 | 23,900 | | | 41.4 |
| | ECH16R-10 (5 lbs.) | 1 step (1 phase) | 208 | 45.1 | 7.5 | 25,600 | ECH16R-26/65-10 | ECH16-511 | 50.0 |
| | | | 220 | 47.8 | 8.4 | 28,700 | | | 52.6 |
| | | | 230 | 50.0 | 9.2 | 31,400 | | | 54.9 |
| | | | 240 | 52.1 | 10.0 | 34,100 | | | 57.0 |
| | ECH16-15 (18 lbs.) | 1 step (1 phase) | 208 | 67.8 | 11.3 | 38,600 | ---- | ECH16-511 | 72.6 |
| | | | 220 | 71.6 | 12.6 | 43,000 | | | 76.5 |
| | | | 230 | 74.9 | 13.8 | 47,100 | | | 79.8 |
| | | | 240 | 78.1 | 15.0 | 51,200 | | | 83.0 |
| | ECH16-20 (19 lbs.) | 1 step (1 phase) | 208 | 90.3 | 15.0 | 51,200 | ---- | ECH16-511 | 95.1 |
| | | | 220 | 95.5 | 16.8 | 57,300 | | | 100.4 |
| | | | 230 | 99.8 | 18.4 | 62,800 | | | 104.6 |
| | | | 240 | 104.1 | 20.0 | 68,300 | | | 109.0 |
| | ECH16-25 (19 lbs.) | 1 step (1 phase) | 208 | 112.9 | 18.8 | 64,200 | ---- | ECH16-511 | 117.8 |
| | | | 220 | 119.4 | 21.0 | 71,700 | | | 124.3 |
| | | | 230 | 124.9 | 23.0 | 78,500 | | | 129.8 |
| | | | 240 | 130.3 | 25.0 | 85,300 | | | 135.1 |
| CHA16-513 | ECH16-7 (17 lbs.) | 1 step (3 phase) | 208 | 18.3 | 5.3 | 18,100 | ---- | ECH16-513 | 23.1 |
| | | | 220 | 19.3 | 5.9 | 20,100 | | | 24.1 |
| | | | 230 | 20.1 | 6.4 | 21,800 | | | 25.0 |
| | | | 240 | 21.0 | 7.0 | 23,900 | | | 25.9 |
| | | | 440 | 9.6 | 5.8 | 19,800 | | | 11.9 |
| | | | 460 | 10.1 | 6.5 | 22,200 | | ECH16-513/653 | 12.4 |
| | | | 480 | 10.5 | 7.0 | 23,900 | | | 12.8 |
| | ECH16-10 (17 lbs.) | 1 step (3 phase) | 208 | 26.1 | 7.5 | 25,600 | ---- | ECH16-513 | 31.0 |
| | | | 220 | 27.6 | 8.4 | 28,700 | | | 32.5 |
| | | | 230 | 28.9 | 9.2 | 31,400 | | | 33.8 |
| | | | 240 | 30.1 | 10.0 | 34,100 | | | 35.0 |
| | | | 440 | 13.8 | 8.4 | 28,700 | | ECH16-513/653 | 16.0 |
| | | | 460 | 14.4 | 9.2 | 31,400 | | | 16.6 |
| | | | 480 | 15.0 | 10.0 | 34,100 | | | 17.3 |
| | ECH16-15 (17 lbs.) | 1 step (3 phase) | 208 | 39.1 | 11.3 | 38,600 | ---- | ECH16-513 | 44.0 |
| | | | 220 | 41.4 | 12.6 | 43,000 | | | 46.3 |
| | | | 230 | 43.2 | 13.8 | 47,100 | | | 48.1 |
| | | | 240 | 45.1 | 15.0 | 51,200 | | | 50.0 |
| | | | 440 | 20.6 | 12.6 | 43,000 | | ECH16-513/653 | 22.9 |
| | | | 460 | 21.6 | 13.8 | 47,100 | | | 23.9 |
| | | | 480 | 22.5 | 15.0 | 51,200 | | | 24.8 |
| | ECH16-20 (20 lbs.) | 2 steps (3 phase) | 208 | 52.1 | 15.0 | 51,200 | ---- | ECH16-513 | 57.0 |
| | | | 220 | 55.1 | 16.8 | 57,300 | | | 60.0 |
| | | | 230 | 57.6 | 18.4 | 62,800 | | | 62.5 |
| | | | 240 | 60.1 | 20.0 | 68,300 | | | 65.0 |
| | | | 440 | 27.6 | 16.8 | 57,300 | | ECH16-513/653 | 29.9 |
| | | | 460 | 28.9 | 18.4 | 62,800 | | | 31.1 |
| | | | 480 | 30.1 | 20.0 | 68,300 | | | 32.4 |
| | ECH16-25 (20 lbs.) | 2 steps (3 phase) | 208 | 65.1 | 18.8 | 64,200 | ---- | ECH16-513 | 70.0 |
| | | | 220 | 68.9 | 21.0 | 71,700 | | | 73.8 |
| | | | 230 | 72.0 | 22.9 | 78,100 | | | 76.9 |
| | | | 240 | 75.1 | 25.0 | 85,300 | | | 80.0 |
| | | | 440 | 34.5 | 21.0 | 71,700 | | ECH16-513/653 | 36.8 |
| | | | 460 | 36.0 | 22.9 | 78,100 | | | 38.3 |
| | | | 480 | 37.6 | 25.0 | 85,300 | | | 39.9 |

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

CHA16(R)-651-653 ELECTRIC HEAT DATA

| Single Package Unit Model No. | Electric Heater Model No. & Net Weight | No. of Steps & Phase | Volts Input | Heater only *Minimum Circuit Ampacity | Electric Heat Kw Input | Electric Heat Btuh Input | Optional Single Point Power Source Boxes | | |
|-------------------------------|--|----------------------|-------------|---------------------------------------|------------------------|--------------------------|--|-------------------|--|
| | | | | | | | Heater Sub-Fuse Box | Unit Sub-Fuse Box | Total Unit & Electric Heat *Minimum Circuit Ampacity |
| CHA16-651 CHA16R-651 | ECH16R-7 (5 lbs.) | 1 step (1 phase) | 208 | 31.6 | 5.3 | 18,100 | ECH16R-26/65-7 | ECH16-651 | 37.4 |
| | | | 220 | 33.5 | 5.9 | 20,100 | | | 39.3 |
| | | | 230 | 35.0 | 6.4 | 21,800 | | | 40.8 |
| | | | 240 | 36.5 | 7.0 | 23,900 | | | 42.3 |
| | ECH16R-10 (5 lbs.) | 1 step (1 phase) | 208 | 45.1 | 7.5 | 25,600 | ECH16R-26/65-10 | ECH16-651 | 50.9 |
| | | | 220 | 47.8 | 8.4 | 28,700 | | | 53.5 |
| | | | 230 | 50.0 | 9.2 | 31,400 | | | 58.3 |
| | | | 240 | 52.1 | 10.0 | 34,100 | | | 57.9 |
| | ECH16-15 (18 lbs.) | 1 step (1 phase) | 208 | 67.8 | 11.3 | 38,600 | ---- | ECH16-651 | 73.5 |
| | | | 220 | 71.6 | 12.6 | 43,000 | | | 77.4 |
| | | | 230 | 74.9 | 13.8 | 47,100 | | | 80.6 |
| | | | 240 | 78.1 | 15.0 | 51,200 | | | 83.9 |
| | ECH16-20 (19 lbs.) | 1 step (1 phase) | 208 | 90.3 | 15.0 | 51,200 | ---- | ECH16-651 | 96.0 |
| | | | 220 | 95.5 | 16.8 | 57,300 | | | 101.3 |
| | | | 230 | 99.8 | 18.4 | 62,800 | | | 105.5 |
| | | | 240 | 104.1 | 20.0 | 68,300 | | | 109.9 |
| | ECH16-25 (19 lbs.) | 1 step (1 phase) | 208 | 112.9 | 18.8 | 64,200 | ---- | ECH16-651 | 118.6 |
| | | | 220 | 119.4 | 21.0 | 71,700 | | | 125.1 |
| | | | 230 | 124.9 | 23.0 | 78,500 | | | 130.6 |
| | | | 240 | 130.3 | 25.0 | 85,300 | | | 136.0 |
| CHA16-653 | ECH16-7 (17 lbs.) | 1 step (3 phase) | 208 | 18.3 | 5.3 | 18,100 | ---- | ECH16-653 | 24.0 |
| | | | 220 | 19.3 | 5.9 | 20,100 | | | 25.0 |
| | | | 230 | 20.1 | 6.4 | 21,800 | | | 25.9 |
| | | | 240 | 21.0 | 7.0 | 23,900 | | | 26.8 |
| | | | 440 | 9.6 | 5.8 | 19,800 | ---- | ECH16-513/653 | 11.9 |
| | | | 460 | 10.1 | 6.5 | 22,200 | | | 12.4 |
| | ECH16-10 (17 lbs.) | 1 step (3 phase) | 480 | 10.5 | 7.0 | 23,900 | ---- | ECH16-513/653 | 12.8 |
| | | | 208 | 26.1 | 7.5 | 25,600 | | | 31.9 |
| | | | 220 | 27.6 | 8.4 | 28,700 | | | 33.4 |
| | | | 230 | 28.9 | 9.2 | 31,400 | | | 34.6 |
| | | | 240 | 30.1 | 10.0 | 34,100 | | | 35.9 |
| | | | 440 | 13.8 | 8.4 | 28,700 | ---- | ECH16-513/653 | 16.0 |
| | ECH16-15 (17 lbs.) | 1 step (3 phase) | 460 | 14.4 | 9.2 | 31,400 | | | 16.6 |
| | | | 480 | 15.0 | 10.0 | 34,100 | | | 17.3 |
| | | | 208 | 39.1 | 11.3 | 38,600 | ---- | ECH16-653 | 44.9 |
| | | | 220 | 41.4 | 12.6 | 43,000 | | | 47.1 |
| | | | 230 | 43.2 | 13.8 | 47,100 | | | 49.0 |
| | | | 240 | 45.1 | 15.0 | 51,200 | | | 50.9 |
| | ECH16-20 (20 lbs.) | 2 steps (3 phase) | 440 | 20.6 | 12.6 | 43,000 | ---- | ECH16-513/653 | 22.9 |
| | | | 460 | 21.6 | 13.8 | 47,100 | | | 23.9 |
| | | | 480 | 22.5 | 15.0 | 51,200 | | | 24.8 |
| | | | 208 | 52.1 | 15.0 | 51,200 | ---- | ECH16-653 | 57.9 |
| | | | 220 | 55.1 | 16.8 | 57,300 | | | 60.9 |
| | | | 230 | 57.6 | 18.4 | 62,800 | | | 63.4 |
| | ECH16-25 (20 lbs.) | 2 steps (3 phase) | 240 | 60.1 | 20.0 | 68,300 | ---- | ECH16-513/653 | 65.9 |
| | | | 440 | 27.6 | 16.8 | 57,300 | | | 29.9 |
| | | | 460 | 28.9 | 18.4 | 62,800 | | | 31.1 |
| | | | 480 | 30.1 | 20.0 | 68,300 | | | 32.4 |
| | | | 208 | 65.1 | 18.8 | 64,200 | ---- | ECH16-653 | 70.9 |
| | | | 220 | 68.9 | 21.0 | 71,700 | | | 74.6 |
| | ECH16-25 (20 lbs.) | 2 steps (3 phase) | 230 | 72.0 | 22.9 | 78,100 | | | 77.8 |
| | | | 240 | 75.1 | 25.0 | 85,300 | | | 80.9 |
| | | | 440 | 34.5 | 21.0 | 71,700 | ---- | ECH16-513/653 | 36.8 |
| | | | 460 | 36.0 | 22.9 | 78,100 | | | 38.3 |
| | | | 480 | 37.6 | 25.0 | 85,300 | | | 39.9 |

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

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.

CHA16H-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) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | | | | |
| | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | | |
| | | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | 75 | 80 | 85 | |
| 63 | 700 | 23,800 | 1990 | .77 | .91 | 1.00 | 22,600 | 2130 | .79 | .93 | 1.00 | 21,300 | 2270 | .81 | .96 | 1.00 | 19,900 | 2400 | .83 | .99 | 1.00 | | | | |
| | 800 | 24,500 | 2020 | .80 | .95 | 1.00 | 23,200 | 2170 | .81 | .97 | 1.00 | 21,900 | 2310 | .84 | 1.00 | 1.00 | 20,500 | 2440 | .86 | 1.00 | 1.00 | | | | |
| | 900 | 25,200 | 2050 | .82 | .98 | 1.00 | 23,800 | 2200 | .84 | 1.00 | 1.00 | 22,500 | 2350 | .86 | 1.00 | 1.00 | 20,900 | 2480 | .89 | 1.00 | 1.00 | | | | |
| 67 | 700 | 25,000 | 2040 | .61 | .74 | .87 | 23,800 | 2200 | .62 | .76 | .89 | 22,400 | 2350 | .63 | .78 | .92 | 21,000 | 2480 | .64 | .80 | .96 | | | | |
| | 800 | 25,800 | 2080 | .62 | .77 | .91 | 24,500 | 2240 | .64 | .79 | .93 | 23,100 | 2400 | .65 | .81 | .97 | 21,500 | 2530 | .67 | .84 | 1.00 | | | | |
| | 900 | 26,500 | 2120 | .64 | .79 | .94 | 25,100 | 2280 | .65 | .82 | .97 | 23,600 | 2430 | .67 | .84 | 1.00 | 21,900 | 2560 | .69 | .87 | 1.00 | | | | |
| 71 | 700 | 26,100 | 2100 | .46 | .59 | .72 | 24,900 | 2260 | .46 | .60 | .73 | 23,400 | 2420 | .47 | .62 | .75 | 21,900 | 2560 | .47 | .63 | .78 | | | | |
| | 800 | 27,000 | 2150 | .46 | .61 | .74 | 25,600 | 2310 | .47 | .62 | .76 | 24,100 | 2470 | .47 | .63 | .79 | 22,400 | 2600 | .48 | .65 | .82 | | | | |
| | 900 | 27,700 | 2190 | .47 | .62 | .77 | 26,200 | 2350 | .48 | .64 | .79 | 24,600 | 2500 | .48 | .65 | .82 | 22,800 | 2640 | .49 | .68 | .85 | | | | |

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

CHA16H-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) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | | | | |
| | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | | |
| | | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | 75 | 80 | 85 | |
| 63 | 875 | 29,500 | 2570 | .75 | .88 | 1.00 | 27,800 | 2740 | .77 | .91 | 1.00 | 26,200 | 2880 | .79 | .93 | 1.00 | 24,500 | 3010 | .81 | .97 | 1.00 | | | | |
| | 1000 | 30,500 | 2600 | .77 | .91 | 1.00 | 28,900 | 2770 | .79 | .94 | 1.00 | 26,800 | 2910 | .81 | .97 | 1.00 | 25,100 | 3050 | .84 | 1.00 | 1.00 | | | | |
| | 1125 | 31,300 | 2630 | .80 | .95 | 1.00 | 29,300 | 2790 | .82 | .98 | 1.00 | 27,600 | 2950 | .84 | 1.00 | 1.00 | 25,600 | 3080 | .87 | 1.00 | 1.00 | | | | |
| 67 | 875 | 31,000 | 2620 | .59 | .72 | .85 | 29,300 | 2790 | .60 | .74 | .87 | 27,600 | 2950 | .62 | .76 | .90 | 25,800 | 3090 | .63 | .78 | .93 | | | | |
| | 1000 | 32,000 | 2650 | .61 | .75 | .88 | 30,200 | 2830 | .62 | .77 | .91 | 28,400 | 2990 | .63 | .79 | .93 | 26,600 | 3140 | .65 | .81 | .97 | | | | |
| | 1125 | 32,800 | 2680 | .62 | .77 | .91 | 31,000 | 2860 | .64 | .79 | .94 | 29,100 | 3020 | .65 | .82 | .97 | 27,200 | 3170 | .67 | .84 | 1.00 | | | | |
| 71 | 875 | 32,400 | 2670 | .45 | .58 | .70 | 30,700 | 2850 | .45 | .59 | .71 | 28,900 | 3010 | .46 | .60 | .73 | 27,100 | 3170 | .47 | .62 | .76 | | | | |
| | 1000 | 33,500 | 2700 | .46 | .59 | .72 | 31,700 | 2880 | .46 | .61 | .74 | 29,800 | 3060 | .47 | .62 | .76 | 27,900 | 3220 | .47 | .64 | .79 | | | | |
| | 1125 | 34,300 | 2720 | .46 | .61 | .75 | 32,500 | 2910 | .47 | .62 | .77 | 30,500 | 3090 | .47 | .64 | .79 | 28,500 | 3260 | .48 | .66 | .82 | | | | |

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

CHA16(R)-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) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | | | | |
| | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | | |
| | | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | 75 | 80 | 85 | |
| 63 | 1050 | 36,300 | 3050 | .72 | .85 | .97 | 34,100 | 3240 | .73 | .87 | 1.00 | 32,000 | 3470 | .76 | .90 | 1.00 | 29,900 | 3740 | .78 | .94 | 1.00 | | | | |
| | 1200 | 37,500 | 3110 | .74 | .88 | 1.00 | 35,400 | 3300 | .76 | .91 | 1.00 | 33,100 | 3530 | .78 | .94 | 1.00 | 30,700 | 3800 | .81 | .98 | 1.00 | | | | |
| | 1350 | 38,700 | 3160 | .77 | .92 | 1.00 | 36,400 | 3350 | .79 | .95 | 1.00 | 33,900 | 3580 | .81 | .98 | 1.00 | 31,500 | 3850 | .84 | 1.00 | 1.00 | | | | |
| 67 | 1050 | 38,300 | 3140 | .57 | .69 | .81 | 36,100 | 3350 | .58 | .71 | .84 | 33,900 | 3580 | .59 | .73 | .86 | 31,600 | 3860 | .60 | .75 | .90 | | | | |
| | 1200 | 39,600 | 3210 | .58 | .71 | .85 | 37,300 | 3410 | .59 | .73 | .87 | 35,000 | 3650 | .61 | .76 | .91 | 32,600 | 3920 | .62 | .78 | .94 | | | | |
| | 1350 | 40,700 | 3260 | .59 | .74 | .88 | 38,300 | 3460 | .61 | .76 | .91 | 35,900 | 3700 | .62 | .79 | .95 | 33,400 | 3970 | .64 | .82 | .98 | | | | |
| 71 | 1050 | 40,100 | 3230 | .43 | .55 | .66 | 37,900 | 3440 | .43 | .56 | .68 | 35,600 | 3680 | .43 | .57 | .70 | 33,300 | 3960 | .44 | .59 | .72 | | | | |
| | 1200 | 41,500 | 3300 | .43 | .56 | .69 | 39,100 | 3500 | .43 | .58 | .71 | 36,700 | 3750 | .44 | .59 | .73 | 34,300 | 4030 | .45 | .61 | .76 | | | | |
| | 1350 | 42,600 | 3350 | .44 | .58 | .71 | 40,200 | 3560 | .44 | .59 | .74 | 37,600 | 3800 | .45 | .61 | .76 | 35,100 | 4080 | .46 | .63 | .79 | | | | |

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

CHA16(R)-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) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | | | | |
| | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | | |
| | | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | 75 | 80 | 85 | |
| 63 | 1400 | 47,700 | 3950 | .74 | .87 | .99 | 45,500 | 4250 | .75 | .89 | 1.00 | 43,300 | 4530 | .77 | .91 | 1.00 | 41,000 | 4790 | .79 | .94 | 1.00 | | | | |
| | 1600 | 49,400 | 4020 | .76 | .90 | 1.00 | 47,200 | 4330 | .78 | .92 | 1.00 | 44,700 | 4610 | .80 | .95 | 1.00 | 42,000 | 4860 | .82 | .98 | 1.00 | | | | |
| | 1800 | 50,900 | 4080 | .79 | .93 | 1.00 | 48,100 | 4370 | .80 | .96 | 1.00 | 45,800 | 4670 | .82 | .98 | 1.00 | 43,700 | 4920 | .85 | 1.00 | 1.00 | | | | |
| 67 | 1400 | 50,000 | 4050 | .58 | .71 | .83 | 47,800 | 4360 | .59 | .73 | .85 | 45,600 | 4650 | .60 | .74 | .87 | 43,300 | 4940 | .61 | .76 | .90 | | | | |
| | 1600 | 51,800 | 4130 | .60 | .74 | .86 | 49,500 | 4440 | .61 | .75 | .89 | 47,100 | 4740 | .62 | .77 | .91 | 44,700 | 5030 | .63 | .79 | .94 | | | | |
| | 1800 | 53,300 | 4190 | .62 | .76 | .90 | 50,900 | 4510 | .63 | .78 | .92 | 48,400 | 4810 | .64 | .80 | .94 | 45,900 | 5100 | .65 | .82 | .97 | | | | |
| 71 | 1400 | 52,200 | 4150 | .44 | .57 | .69 | 50,000 | 4470 | .44 | .58 | .70 | 47,800 | 4780 | .44 | .59 | .71 | 45,400 | 5070 | .45 | .60 | .73 | | | | |
| | 1600 | 54,000 | 4220 | .45 | .58 | .71 | 51,700 | 4550 | .45 | .59 | .72 | 49,300 | 4870 | .45 | .60 | .74 | 46,800 | 5170 | .46 | .62 | .76 | | | | |
| | 1800 | 55,500 | 4290 | .46 | .60 | .73 | 53,200 | 4620 | .46 | .61 | .75 | 50,600 | 4940 | .47 | .62 | .77 | 48,000 | 5240 | .47 | .64 | .79 | | | | |

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

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.

CHA16(R)-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) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | | Total Cool Cap. (Btuh) | Comp. Motor Watts Input | Sensible To Total Ratio (S/T) | | |
| | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | | | | Dry Bulb (°F) | | |
| | | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 | | | 75 | 80 | 85 |
| 63 | 1750 | 58,100 | 4960 | .75 | .89 | 1.00 | 55,500 | 5320 | .77 | .91 | 1.00 | 52,800 | 5690 | .78 | .93 | 1.00 | 50,200 | 6080 | .80 | .96 | 1.00 |
| | 2000 | 60,000 | 5030 | .78 | .92 | 1.00 | 57,200 | 5390 | .79 | .95 | 1.00 | 54,500 | 5780 | .81 | .97 | 1.00 | 51,400 | 6150 | .83 | 1.00 | 1.00 |
| | 2250 | 61,500 | 5080 | .80 | .96 | 1.00 | 58,200 | 5430 | .82 | .98 | 1.00 | 55,500 | 5830 | .84 | 1.00 | 1.00 | 52,100 | 6190 | .86 | 1.00 | 1.00 |
| 67 | 1750 | 60,900 | 5060 | .59 | .73 | .85 | 58,200 | 5430 | .60 | .74 | .87 | 55,600 | 5830 | .61 | .76 | .89 | 52,900 | 6240 | .62 | .77 | .92 |
| | 2000 | 62,800 | 5130 | .61 | .75 | .89 | 60,100 | 5510 | .62 | .77 | .91 | 57,300 | 5920 | .63 | .79 | .93 | 54,600 | 6340 | .64 | .81 | .96 |
| | 2250 | 64,500 | 5180 | .62 | .78 | .92 | 61,700 | 5570 | .63 | .79 | .94 | 58,800 | 5990 | .65 | .81 | .96 | 55,900 | 6430 | .66 | .83 | .99 |
| 71 | 1750 | 63,600 | 5150 | .44 | .58 | .70 | 61,000 | 5540 | .45 | .58 | .71 | 58,300 | 5970 | .45 | .59 | .73 | 55,600 | 6410 | .46 | .61 | .75 |
| | 2000 | 65,700 | 5220 | .45 | .59 | .73 | 62,900 | 5630 | .45 | .60 | .74 | 60,100 | 6060 | .46 | .61 | .76 | 57,300 | 6520 | .46 | .62 | .78 |
| | 2250 | 67,400 | 5290 | .45 | .61 | .75 | 64,500 | 5700 | .46 | .62 | .77 | 61,700 | 6140 | .46 | .63 | .78 | 58,900 | 6600 | .47 | .64 | .81 |

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

BLOWER DATA

CHA16H-261 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|-----|
| | High | Med-High | Med-Low | Low |
| 0 | 1345 | 1000 | 880 | 710 |
| .05 | 1320 | 995 | 870 | 705 |
| .10 | 1290 | 995 | 855 | 695 |
| .15 | 1265 | 985 | 845 | 690 |
| .20 | 1240 | 975 | 830 | 680 |
| .25 | 1210 | 960 | 815 | 670 |
| .30 | 1180 | 940 | 795 | 660 |
| .40 | 1120 | 895 | 760 | 630 |
| .50 | 1055 | 840 | 710 | 585 |
| .60 | 975 | 770 | 645 | 525 |
| .70 | 880 | 685 | 565 | 450 |
| .75 | 825 | 635 | 515 | 405 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16H-311 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|-----|
| | High | Med-High | Med-Low | Low |
| 0 | 1450 | 1080 | 910 | 735 |
| .05 | 1405 | 1065 | 895 | 720 |
| .10 | 1370 | 1035 | 880 | 710 |
| .15 | 1325 | 1015 | 875 | 705 |
| .20 | 1300 | 995 | 850 | 690 |
| .25 | 1265 | 985 | 835 | 685 |
| .30 | 1220 | 960 | 815 | 665 |
| .40 | 1170 | 915 | 780 | 620 |
| .50 | 1085 | 855 | 710 | 540 |
| .60 | 995 | 720 | 590 | 475 |
| .70 | 850 | 555 | 490 | 380 |
| .75 | 705 | 480 | 430 | 315 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16(R)-411-413 BLOWER PERFORMANCE @ 230 VOLTS (With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|-----|
| | High | Med-High | Med-Low | Low |
| 0 | 1415 | 1350 | 1135 | 915 |
| .05 | 1395 | 1335 | 1125 | 905 |
| .10 | 1375 | 1315 | 1115 | 895 |
| .15 | 1360 | 1290 | 1110 | 890 |
| .20 | 1355 | 1275 | 1105 | 885 |
| .25 | 1325 | 1255 | 1095 | 875 |
| .30 | 1310 | 1235 | 1085 | 865 |
| .40 | 1265 | 1195 | 1060 | 845 |
| .50 | 1220 | 1155 | 1020 | 825 |
| .60 | 1170 | 1105 | 975 | 785 |
| .70 | 1115 | 1045 | 925 | 725 |
| .75 | 1085 | 1010 | 895 | 685 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16(R)-411-413 BLOWER PERFORMANCE @ 230 VOLTS (With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|-----|
| | High | Med-High | Med-Low | Low |
| 0 | 1490 | 1460 | 1145 | 920 |
| .05 | 1470 | 1440 | 1135 | 910 |
| .10 | 1450 | 1420 | 1125 | 900 |
| .15 | 1435 | 1395 | 1120 | 895 |
| .20 | 1430 | 1375 | 1115 | 890 |
| .25 | 1400 | 1355 | 1105 | 880 |
| .30 | 1380 | 1335 | 1095 | 870 |
| .40 | 1335 | 1285 | 1070 | 850 |
| .50 | 1285 | 1235 | 1030 | 830 |
| .60 | 1235 | 1195 | 985 | 790 |
| .70 | 1185 | 1140 | 935 | 730 |
| .75 | 1160 | 1110 | 905 | 690 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-413 BLOWER PERFORMANCE @ 460 VOLTS (With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 1625 | 1465 | 1100 |
| .05 | 1600 | 1445 | 1100 |
| .10 | 1570 | 1420 | 1100 |
| .15 | 1555 | 1395 | 1095 |
| .20 | 1525 | 1385 | 1090 |
| .25 | 1485 | 1365 | 1075 |
| .30 | 1465 | 1340 | 1070 |
| .40 | 1400 | 1285 | 1035 |
| .50 | 1335 | 1235 | 1005 |
| .60 | 1260 | 1165 | 955 |
| .70 | 1170 | 1085 | 875 |
| .75 | 1100 | 1045 | 815 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-413 BLOWER PERFORMANCE @ 460 VOLTS (With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 1710 | 1590 | 1105 |
| .05 | 1685 | 1565 | 1105 |
| .10 | 1655 | 1535 | 1105 |
| .15 | 1630 | 1510 | 1100 |
| .20 | 1610 | 1490 | 1095 |
| .25 | 1570 | 1470 | 1085 |
| .30 | 1540 | 1445 | 1075 |
| .40 | 1475 | 1385 | 1040 |
| .50 | 1405 | 1330 | 1010 |
| .60 | 1335 | 1260 | 960 |
| .70 | 1240 | 1185 | 885 |
| .75 | 1180 | 1150 | 825 |

NOTE — All cfm is measured external to the unit with dry coil.

BLOWER DATA

CHA16(R)-511-513 BLOWER PERFORMANCE @ 230 VOLTS
(With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|------|
| | High | Med-High | Med-Low | Low |
| 0 | 2065 | 1715 | 1515 | 1305 |
| .05 | 2055 | 1705 | 1505 | 1300 |
| .10 | 2040 | 1690 | 1495 | 1300 |
| .15 | 2020 | 1680 | 1485 | 1295 |
| .20 | 2000 | 1665 | 1475 | 1290 |
| .25 | 1975 | 1650 | 1470 | 1285 |
| .30 | 1950 | 1635 | 1450 | 1280 |
| .40 | 1885 | 1600 | 1425 | 1260 |
| .50 | 1810 | 1565 | 1395 | 1225 |
| .60 | 1730 | 1525 | 1360 | 1175 |
| .70 | 1645 | 1600 | 1320 | 1110 |
| .75 | 1600 | 1455 | 1295 | 1070 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16(R)-511-513 BLOWER PERFORMANCE @ 230 VOLTS
(With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | |
|------------------------------------|-----------------------------------|----------|---------|------|
| | High | Med-High | Med-Low | Low |
| 0 | 2140 | 1785 | 1535 | 1305 |
| .05 | 2115 | 1770 | 1530 | 1300 |
| .10 | 2090 | 1755 | 1520 | 1295 |
| .15 | 2070 | 1745 | 1510 | 1290 |
| .20 | 2045 | 1730 | 1500 | 1285 |
| .25 | 2020 | 1715 | 1490 | 1280 |
| .30 | 1995 | 1700 | 1480 | 1275 |
| .40 | 1935 | 1665 | 1460 | 1260 |
| .50 | 1875 | 1630 | 1430 | 1235 |
| .60 | 1800 | 1585 | 1400 | 1205 |
| .70 | 1710 | 1530 | 1370 | 1170 |
| .75 | 1655 | 1495 | 1355 | 1150 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-513 BLOWER PERFORMANCE @ 460 VOLTS
(With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 2140 | 1745 | 1175 |
| .05 | 2120 | 1730 | 1175 |
| .10 | 2080 | 1720 | 1170 |
| .15 | 2045 | 1710 | 1170 |
| .20 | 2005 | 1695 | 1165 |
| .25 | 1975 | 1680 | 1160 |
| .30 | 1940 | 1665 | 1150 |
| .40 | 1870 | 1625 | 1135 |
| .50 | 1790 | 1580 | 1110 |
| .60 | 1705 | 1515 | 1075 |
| .70 | 1605 | 1430 | 1030 |
| .75 | 1555 | 1375 | 1000 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-513 BLOWER PERFORMANCE @ 460 VOLTS
(With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 2160 | 1815 | 1210 |
| .05 | 2125 | 1800 | 1210 |
| .10 | 2095 | 1790 | 1200 |
| .15 | 2060 | 1780 | 1200 |
| .20 | 2025 | 1760 | 1195 |
| .25 | 1990 | 1745 | 1190 |
| .30 | 1955 | 1730 | 1185 |
| .40 | 1885 | 1690 | 1170 |
| .50 | 1805 | 1640 | 1140 |
| .60 | 1715 | 1575 | 1105 |
| .70 | 1615 | 1495 | 1065 |
| .75 | 1560 | 1445 | 1040 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16(R)-651-653 BLOWER PERFORMANCE @ 230 VOLTS
(With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | | |
|------------------------------------|-----------------------------------|----------|--------|---------|------|
| | High | Med-High | Medium | Med-Low | Low |
| 0 | 2570 | 2400 | 2170 | 1860 | 1600 |
| .05 | 2545 | 2380 | 2150 | 1845 | 1590 |
| .10 | 2520 | 2350 | 2130 | 1830 | 1580 |
| .15 | 2500 | 2330 | 2110 | 1815 | 1565 |
| .20 | 2480 | 2310 | 2090 | 1800 | 1550 |
| .25 | 2455 | 2280 | 2065 | 1785 | 1535 |
| .30 | 2430 | 2270 | 2040 | 1770 | 1520 |
| .40 | 2360 | 2220 | 2000 | 1740 | 1480 |
| .50 | 2300 | 2170 | 1960 | 1710 | 1450 |
| .60 | 2220 | 2110 | 1910 | 1650 | 1400 |
| .70 | 2120 | 2040 | 1850 | 1560 | 1330 |
| .75 | 2060 | 2000 | 1815 | 1500 | 1285 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16(R)-651-653 BLOWER PERFORMANCE @ 230 VOLTS
(With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | | | |
|------------------------------------|-----------------------------------|----------|--------|---------|------|
| | High | Med-High | Medium | Med-Low | Low |
| 0 | 2690 | 2440 | 2190 | 1890 | 1620 |
| .05 | 2665 | 2420 | 2170 | 1875 | 1610 |
| .10 | 2640 | 2390 | 2150 | 1860 | 1600 |
| .15 | 2620 | 2370 | 2130 | 1845 | 1585 |
| .20 | 2600 | 2350 | 2110 | 1830 | 1570 |
| .25 | 2575 | 2320 | 2085 | 1815 | 1555 |
| .30 | 2550 | 2310 | 2060 | 1800 | 1540 |
| .40 | 2480 | 2260 | 2020 | 1770 | 1500 |
| .50 | 2420 | 2210 | 1980 | 1740 | 1470 |
| .60 | 2340 | 2150 | 1930 | 1680 | 1420 |
| .70 | 2240 | 2080 | 1870 | 1590 | 1350 |
| .75 | 2180 | 2040 | 1835 | 1530 | 1305 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-653 BLOWER PERFORMANCE @ 460 VOLTS
(With Down-Flo Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 2570 | 2200 | 1810 |
| .05 | 2545 | 2190 | 1820 |
| .10 | 2520 | 2170 | 1810 |
| .15 | 2500 | 2150 | 1810 |
| .20 | 2480 | 2130 | 1800 |
| .25 | 2455 | 2110 | 1790 |
| .30 | 2430 | 2100 | 1770 |
| .40 | 2360 | 2060 | 1720 |
| .50 | 2300 | 2010 | 1670 |
| .60 | 2220 | 1970 | 1600 |
| .70 | 2120 | 1900 | 1540 |
| .75 | 2060 | 1860 | 1520 |

NOTE — All cfm is measured external to the unit with dry coil.

CHA16-653 BLOWER PERFORMANCE @ 460 VOLTS
(With Horizontal Supply and Return Air Openings)

| External Static Pressure (in. wg.) | Air Volume (cfm) @ Various Speeds | | |
|------------------------------------|-----------------------------------|--------|------|
| | High | Medium | Low |
| 0 | 2690 | 2220 | 1840 |
| .05 | 2665 | 2210 | 1850 |
| .10 | 2640 | 2190 | 1840 |
| .15 | 2620 | 2170 | 1840 |
| .20 | 2600 | 2150 | 1830 |
| .25 | 2575 | 2130 | 1820 |
| .30 | 2550 | 2120 | 1800 |
| .40 | 2480 | 2080 | 1750 |
| .50 | 2420 | 2060 | 1700 |
| .60 | 2340 | 1990 | 1630 |
| .70 | 2240 | 1920 | 1570 |
| .75 | 2180 | 1880 | 1550 |

NOTE — All cfm is measured external to the unit with dry coil.

BLOWER DATA

ACCESSORY AIR RESISTANCE

| Unit Model No. | Air Volume (cfm) | Total Resistance (inches water gauge) | | | | | | | | | |
|--------------------------|------------------------|---------------------------------------|----------------|------------------------------------|----------------|--------------------------------|--|------------------|--------------------------|-----------------------------|--------------------|
| | | REMD16 Down-Flo Economizer | | EMDH16 Horizontal Economizer | | †RDE16-41 Duct Enclosure | †DF16 Down-Flo Filter Adaptor Kit | RTD9-65 Diffuser | | | FD9-65 Diffuser |
| | | With Filter | Less Filter | With Filter | Less Filter | | | 2 Ends Open | 1 Side 2 Ends Open | All Ends & Sides Open | |
| CHA16H-261 CHA16H-311 | 800 | .16 | .01 | ---- | ---- | .11 | ---- | .15 | .13 | .11 | .11 |
| | 1000 | .20 | .02 | ---- | ---- | .19 | ---- | .19 | .16 | .14 | .14 |
| | 1200 | .24 | .03 | ---- | ---- | .22 | ---- | .25 | .20 | .17 | .17 |
| CHA16-410 | 800 | .16 | .01 | .18 | .01 | ---- | .15 | .15 | .13 | .11 | .11 |
| | 1000 | .20 | .02 | .20 | .02 | ---- | .18 | .19 | .16 | .14 | .14 |
| | 1200 | .24 | .03 | .35 | .03 | ---- | .21 | .25 | .20 | .17 | .17 |
| | 1400 | .28 | .03 | .50 | .05 | ---- | .25 | .33 | .26 | .20 | .20 |
| CHA16-510 CHA16-650 | 1600 | .16 | .01 | .30 | .01 | ---- | .15 | .43 | .32 | .24 | .24 |
| | 1800 | .19 | .02 | .35 | .02 | ---- | .17 | .56 | .40 | .30 | .30 |
| | 2000 | .23 | .03 | .40 | .03 | ---- | .20 | .73 | .50 | .36 | .36 |
| | 2200 | .27 | .04 | .47 | .04 | ---- | .23 | .95 | .63 | .44 | .44 |

†Air resistance is with the air filter in place.

NOTE — Electric heaters have no appreciable air resistance.

WET EVAPORATOR COIL AIR RESISTANCE

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 | 600 | 21 | 20 | 14 |
| | 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 | 600 | 15 | 14 | 8 |
| | 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 | 600 | 11 | 10 | 7 |
| | 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.

| Model No. | Air Volume (cfm) | Air Resistance (in. w.g.) |
|--------------|------------------|---------------------------|
| CHA16H-261 | 800 | 0.06 |
| | 1000 | 0.07 |
| | 1200 | 0.08 |
| CHA16H-311 | 800 | 0.09 |
| | 1000 | 0.10 |
| | 1200 | 0.11 |
| CHA16(R)-410 | 800 | 0.09 |
| | 1000 | 0.10 |
| | 1200 | 0.11 |
| | 1400 | 0.12 |
| CHA16(R)-510 | 1600 | 0.11 |
| | 1800 | 0.12 |
| | 2000 | 0.13 |
| | 2200 | 0.14 |
| CHA16(R)-650 | 1600 | 0.08 |
| | 1800 | 0.09 |
| | 2000 | 0.10 |
| | 2200 | 0.11 |

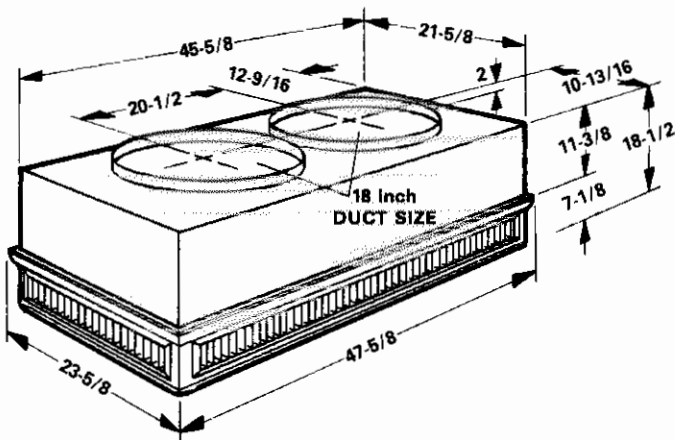
FD9-65 CEILING DIFFUSER AIR THROW DATA

| Air Volume (cfm) | *Effective Throw (ft.) |
|------------------|------------------------|
| 600 | 7 |
| 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.

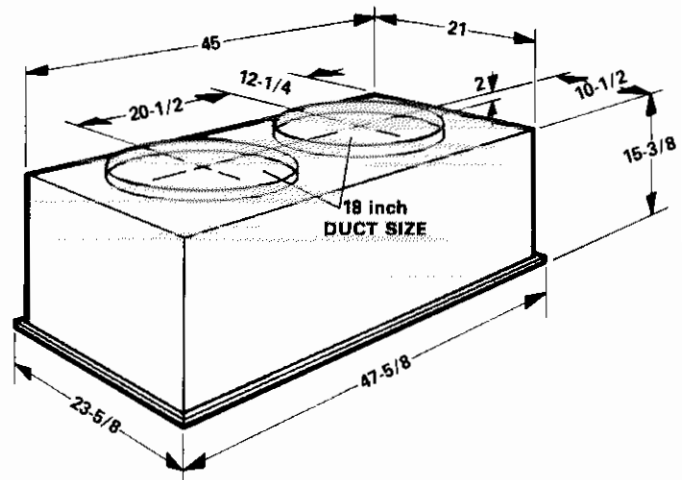
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS DIMENSIONS (inches)

RTD9-65 STEP-DOWN DIFFUSER



RTD9-65 Combination Ceiling 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. Must be ordered extra. See Specifications table.

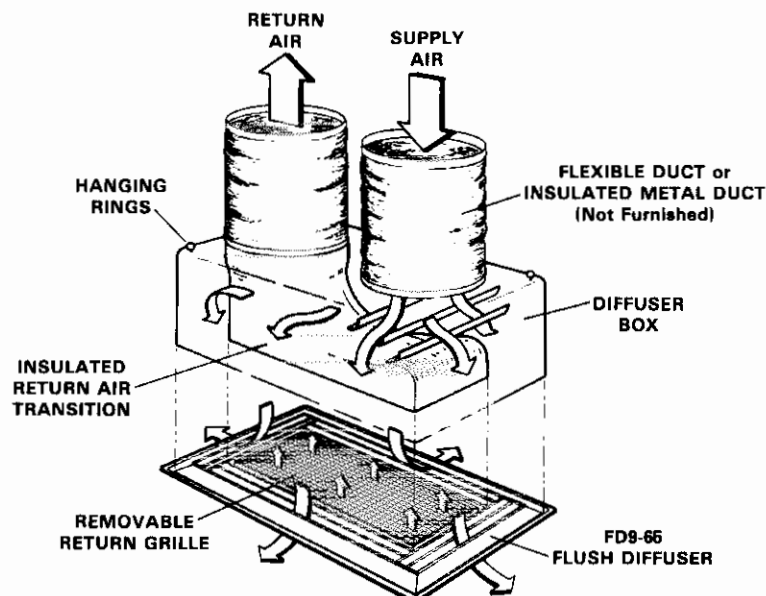
FD9-65 FLUSH DIFFUSER



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. Must be ordered extra. See Specifications table.

Optional SRT16 and SRT16H Supply and Return Transitions — Transitions field install in the roof mounting frame and provide segregated and simple duct connections to supply and return diffuser. Completely insulated galvanized steel transitions have collars for round duct connection. Round duct from the transitions to the diffuser is not furnished and must be provided by the installer. Transitions are completely factory assembled and easily field install in the roof mounting frame with minimum costs and labor requirement. Must be ordered extra. See Specifications table.

DIFFUSER AIR PATTERN



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.

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

Approvals — All electrical components shall have U.L. Listing. All wiring shall be in compliance with NEC.

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

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

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

The compressor shall be resiliently mounted, have overload protection and internal pressure relief. CHA16 models shall have compressor crankcase heater. The refrigeration system shall have suction and liquid line service gauge ports, liquid line strainer and full refrigerant charge. CHA16(R)-510 & 650 shall have expansion valve and thermometer well. CHA16-410, 510 & 650 models shall have high pressure switch and loss of charge switch. Control options shall consist of thermostat, timed-off control and low ambient control. Shall be rated in accordance with ARI Standard 210/240-89 and DOE test procedures.

CHA16 Models Commercial Controls Platform — Shall be furnished and factory installed. Platform shall include control system and economizer wiring harness. Wiring harness shall be used in conjunction with thermostats, related control systems, and economizer dampers.

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. ECH16R safety devices shall consist of limit controls and thermal cutoff safety fuses. ECH16 safety devices shall consist of limit controls and fuse block. ECH16-20 and 25kw (208/240v-3ph) heaters shall have thermal time delay relay to bring elements on and off in sequence with a time delay between each element. Heaters shall be U.L. listed. Optional heater sub-fuse box shall be available for ECH16R electric heaters for single point power supply applications.

Cabinet — Shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry. Supply and return air openings shall be flanged. Evaporator coil condensate drain shall be provided. CHA16-410, 510 & 650 models shall have low voltage terminal strip. Optional lifting lugs shall be available for rigging.

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. Fan shall have safety guard.

OPTIONAL ACCESSORIES

Roof Mounting Frame — Furnish and install a steel roof mounting frame for bottom discharge and return air duct connection. It shall mate to the bottom perimeter of the equipment. When flashed into the roof it shall make a unit mounting curb and provide weatherproof duct connection and entry into the conditioned area. Flashing shall be the responsibility of a roofing contractor. Frame design shall be approved by National Roofing Contractors Association.

Duct Enclosure — Enclosure shall attach to the CHA16H 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 enamel paint finish and shall be completely insulated. Shall include minimum outdoor air intake damper and disposable air filter 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. REMD16 shall include pressure operated gravity exhaust dampers. The assembly shall provide for the introduction of outside air for minimum ventilation and free cooling. The assembly shall include air filters. Damper motor shall be 24 volt three position or fully modulating spring return. Controls shall include electronic discharge air sensor, minimum position switch, and solid-state adjustable enthalpy control. Control option available shall consist of differential enthalpy control (return air sensor).

Horizontal 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.

Outdoor Air Damper Section — Optional manual outdoor dampers shall be available to provide outdoor air requirements of up to 25%. Damper section field installs external to the unit. Shall be equipped with filter for extra air filtering and bird screen protection.

Down-Flo Filter Adaptor — Optional filter adaptor shall field install in unit to provide filtering for basic unit in down-flo applications. Shall include air filter.

Stand-Off Mounting Kit — Optional kit shall be available to elevate unit above mounting surface in horizontal applications.

Roof Curb Power Entry Kit — Optional kit shall provide power entry to the unit through the roof mounting frame.

Ceiling Diffusers — Furnish and install a (flush or stepdown) optional combination ceiling supply and return air diffuser. It shall be capable of not less than ft. radius of effective throw. Supply and return transitions shall be available, for field installation in the roof mounting frame, to provide duct connection to the diffuser.

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

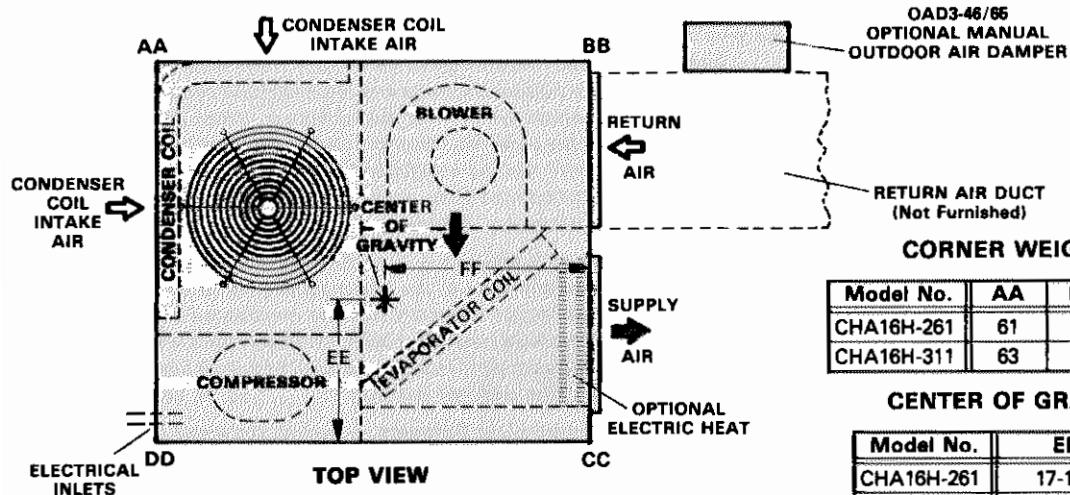
Remote Status Panel — Shall be available for installation within the conditioned area to observe equipment operation. The panel shall include signal lights for Cool Mode, Heat Mode, Compressor 1, Compressor 2, No Heat and Filter.

Remote Switching Status Panel — Shall be available for installation within the conditioned area to control and observe equipment operation. The panel shall include signal lights for Cool Mode, Heat Mode, Compressor 1, Compressor 2, No Heat and Filter. System selector switch and fan switch shall provide operational mode and blower operation. After hours timer switch shall override night setback controls and provide normal operation for time period set.

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

DIMENSIONS (inches)

CHA16H-261 AND CHA16H-311 BASIC UNIT

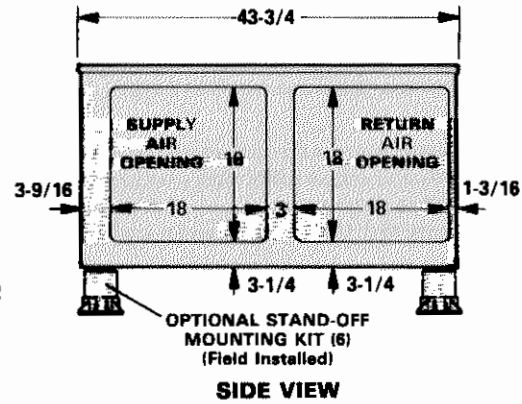
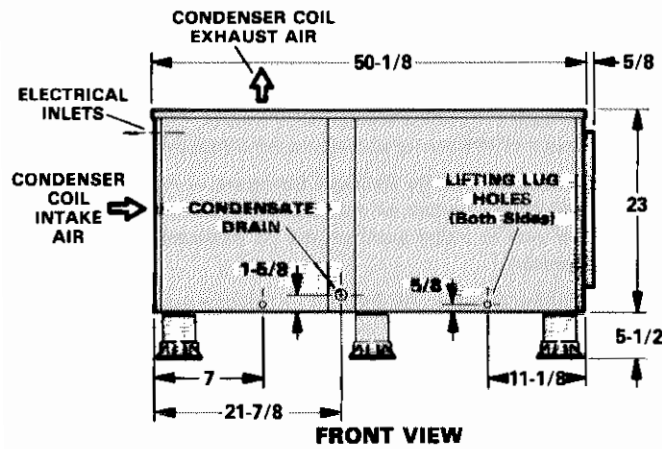


CORNER WEIGHTS (lbs.)

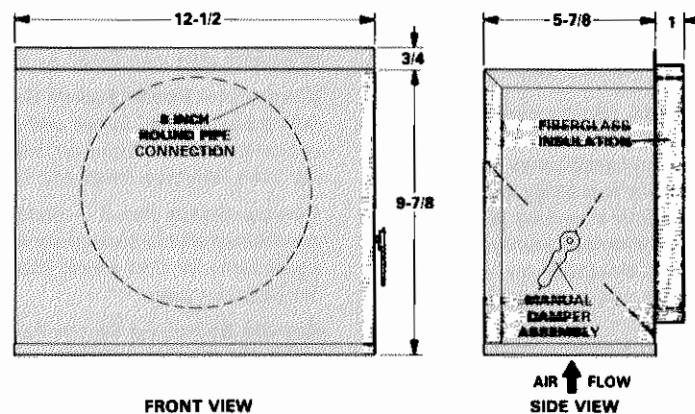
| Model No. | AA | BB | CC | DD |
|------------|----|----|----|----|
| CHA16H-261 | 61 | 52 | 78 | 92 |
| CHA16H-311 | 63 | 54 | 79 | 92 |

CENTER OF GRAVITY (in.)

| Model No. | EE | FF |
|------------|--------|----|
| CHA16H-261 | 17-1/2 | 27 |
| CHA16H-311 | 17-7/8 | 27 |



OAD3-46/66 MINIMUM OUTDOOR AIR DAMPER



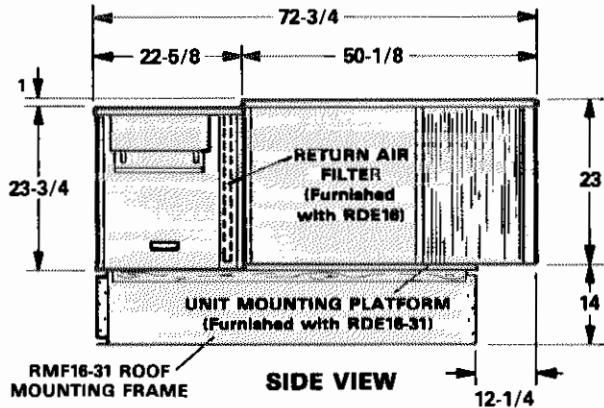
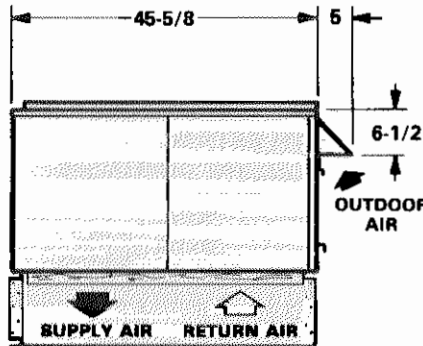
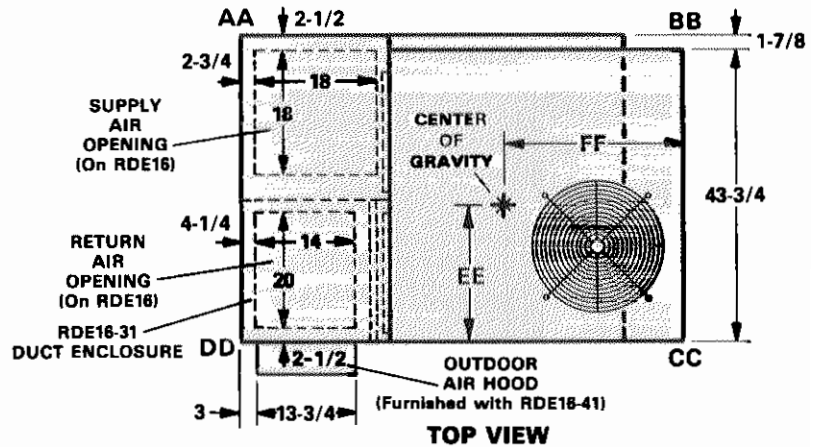
DIMENSIONS (inches)
CHA16H-261 & 311 WITH RDE16-31 DUCT ENCLOSURE
AND RMF16-31 ROOF MOUNTING FRAME

CORNER WEIGHTS (lbs.)

| Model No. | AA | BB | CC | DD |
|------------|-----|-----|-----|----|
| CHA16H-261 | 114 | 136 | 113 | 94 |
| CHA16H-311 | 114 | 137 | 116 | 95 |

CENTER OF GRAVITY (in.)

| Model No. | EE | FF |
|------------|----------|----------|
| CHA16H-261 | 24-15/16 | 33-1/16 |
| CHA16H-311 | 24-3/4 | 32-15/16 |



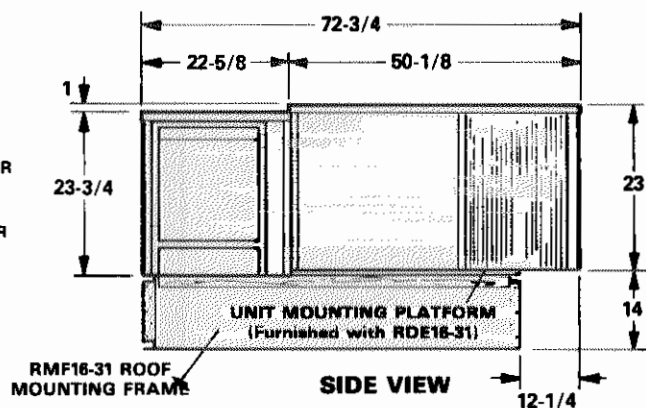
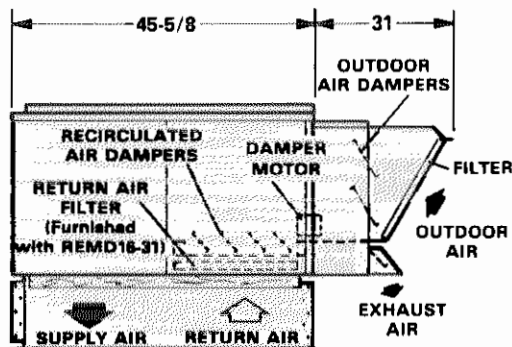
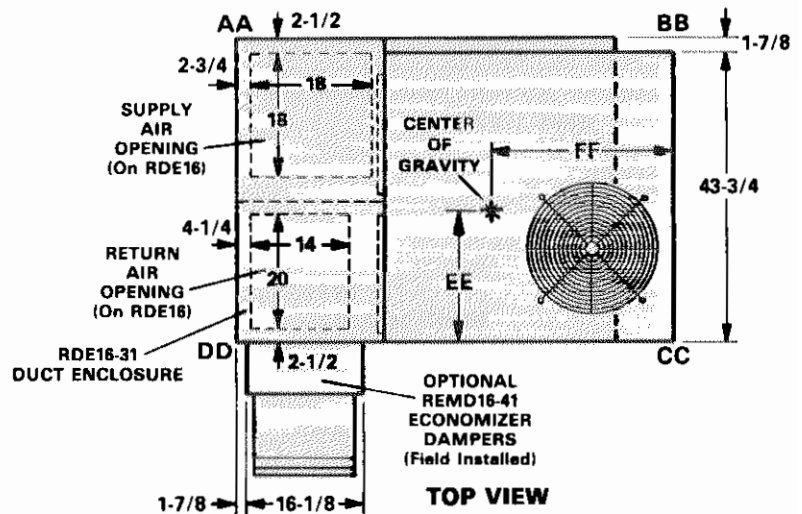
CHA16H-261 & 311 WITH REMD18-41 ECONOMIZER,
RDE16-31 DUCT ENCLOSURE AND RMF16-31 ROOF MOUNTING FRAME

CORNER WEIGHTS (lbs.)

| Model No. | AA | BB | CC | DD |
|------------|-----|-----|-----|-----|
| CHA16H-261 | 119 | 129 | 131 | 121 |
| CHA16H-311 | 119 | 130 | 134 | 122 |

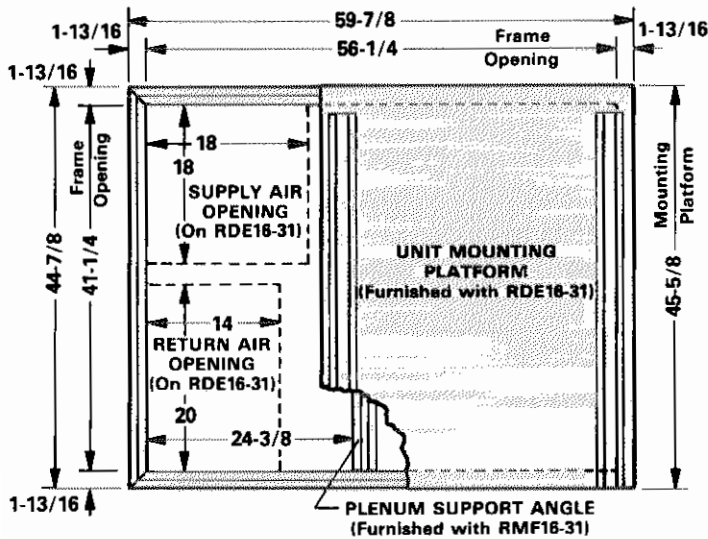
CENTER OF GRAVITY (in.)

| Model No. | EE | FF |
|------------|----------|--------|
| CHA16H-261 | 22-11/16 | 34-7/8 |
| CHA16H-311 | 22-1/2 | 34-3/4 |

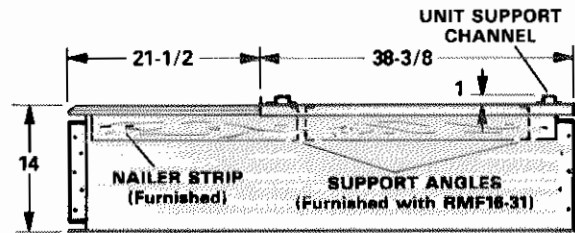


DIMENSIONS (inches)

RMF16-31 ROOF MOUNTING FRAME FOR CHA16H UNITS WITH RDE16-31 DUCT ENCLOSURE



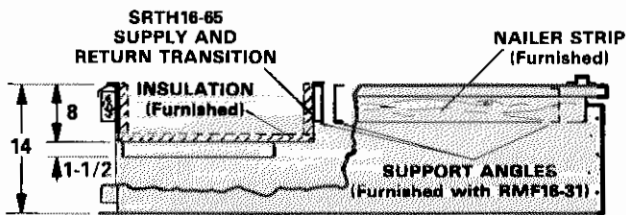
TOP VIEW



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

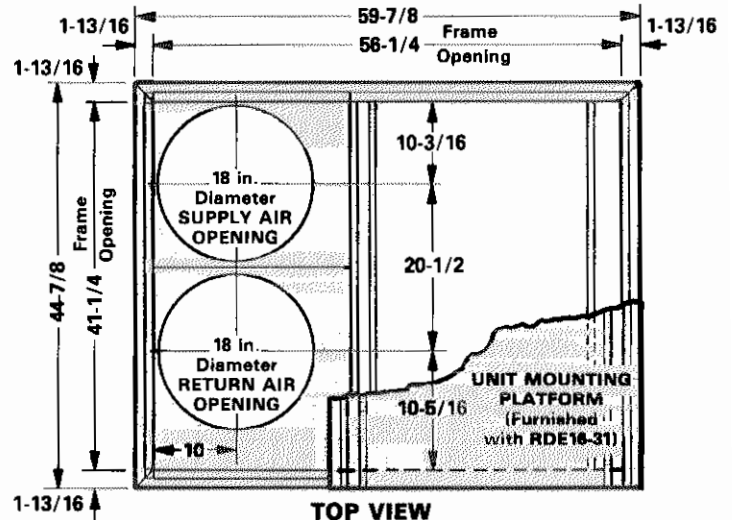
SIDE VIEW

RMF16-31 ROOF MOUNTING FRAME FOR CHA16H UNITS WITH SRTH16-65 SUPPLY AND RETURN AIR TRANSITIONS FOR FD9-65 & RTD9-65 CEILING DIFFUSERS



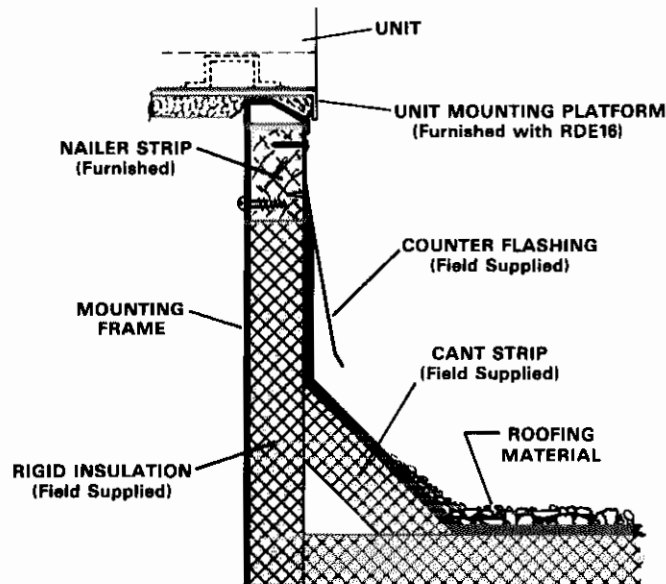
NOTE — Roof deck may be omitted within confines of frame.

SIDE VIEW



TOP VIEW

TYPICAL FLASHING FOR RMF16-31 ROOF MOUNTING FRAME WITH CHA16H SERIES UNITS



DIMENSIONS (inches)

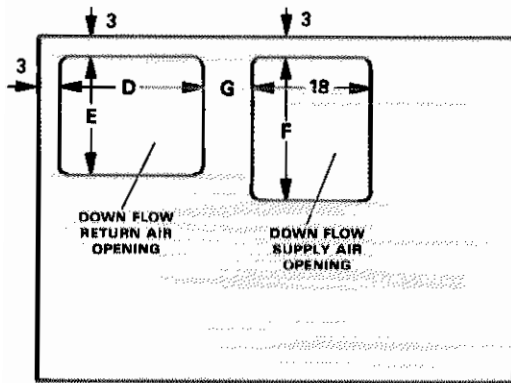
CHA16(R) BASIC UNIT

CORNER WEIGHTS (lbs.)

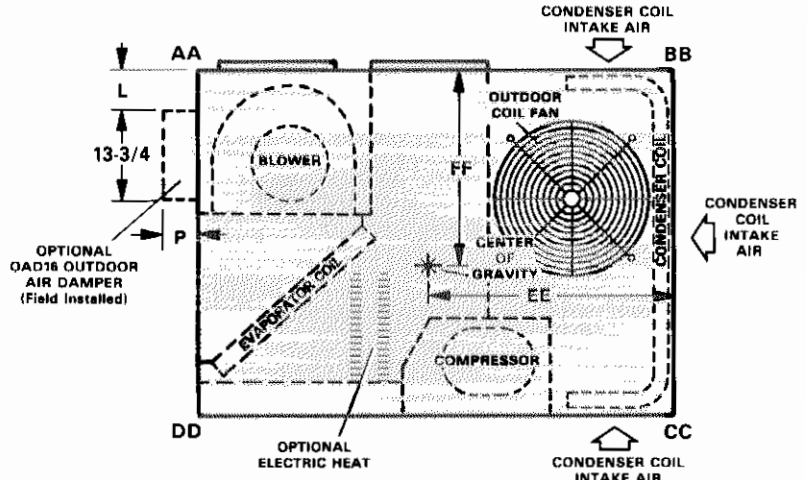
| Model No. | AA | BB | CC | DD |
|------------------|-----|-----|-----|-----|
| CHA16(R)-411-413 | 67 | 73 | 103 | 95 |
| CHA16(R)-511-513 | 86 | 93 | 135 | 124 |
| CHA16(R)-651-653 | 101 | 101 | 136 | 135 |

CENTER OF GRAVITY (in.)

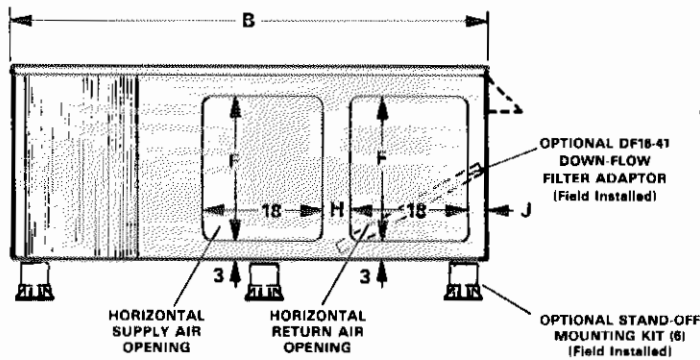
| Model No. | EE | FF |
|------------------|--------|--------|
| CHA16(R)-411-413 | 28-3/4 | 27 |
| CHA16(R)-511-513 | 34-3/4 | 30-3/4 |
| CHA16(R)-651-653 | 36-1/4 | 29-3/4 |



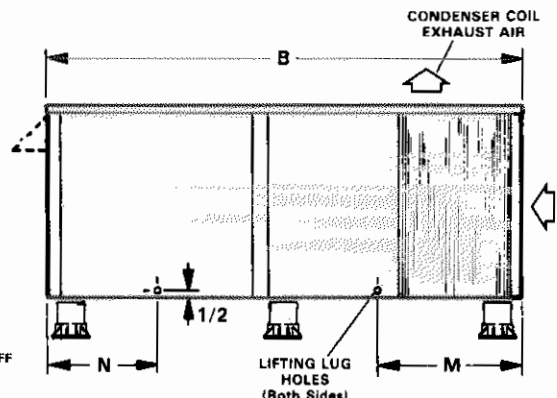
TOP VIEW BASE SECTION



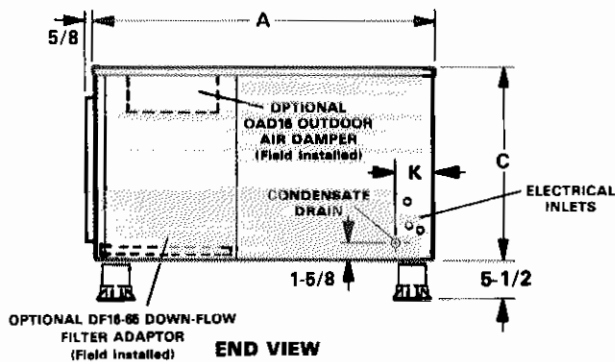
TOP VIEW



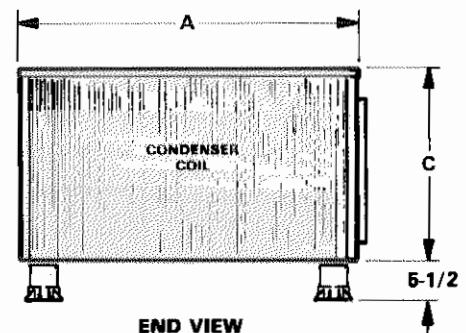
**BACK VIEW
(With Horizontal Supply & Return Air)**



FRONT VIEW



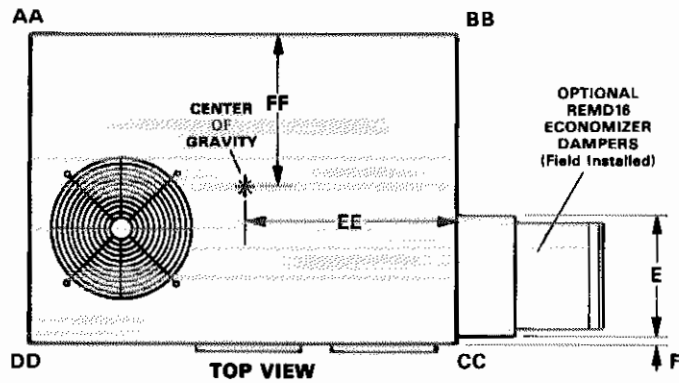
END VIEW



END VIEW

| Model No. | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|------------------|----|--------|----|----|----|----|-------|---|---|-------|---|--------|----|---|
| CHA16(R)-411-413 | 46 | 60 | 23 | 18 | 13 | 13 | 10 | 3 | 4 | 6-1/2 | 2 | 13-1/4 | 10 | 5 |
| CHA16(R)-511-513 | 52 | 72-1/2 | 29 | 22 | 18 | 22 | 7-1/2 | 5 | 3 | 6-1/8 | 5 | 21-1/2 | 17 | 8 |
| CHA16(R)-651-653 | | | | | | | | | | | | | | |

DIMENSIONS (inches)
CHA16 UNIT WITH REMD16 ECONOMIZER DAMPER SECTION
AND RMF16 ROOF MOUNTING FRAME

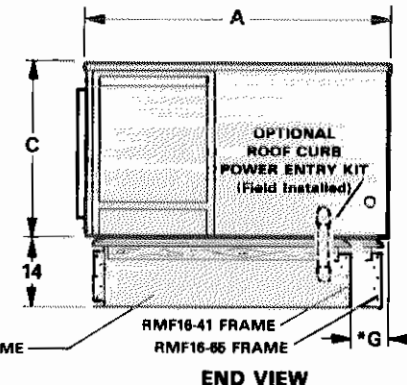
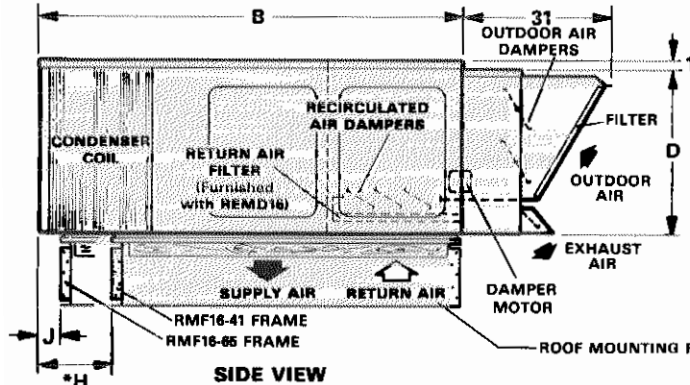


CORNER WEIGHTS (lbs.)

| Model No. | AA | BB | CC | DD |
|------------------|-----|-----|-----|-----|
| CHA16(R)-411-413 | 134 | 114 | 98 | 115 |
| CHA16(R)-511-513 | 173 | 145 | 124 | 148 |
| CHA16(R)-651-653 | 183 | 146 | 132 | 164 |

CENTER OF GRAVITY (in.)

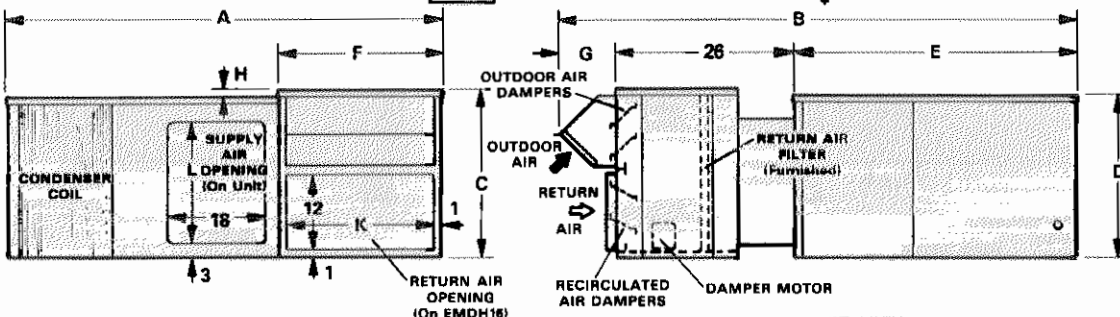
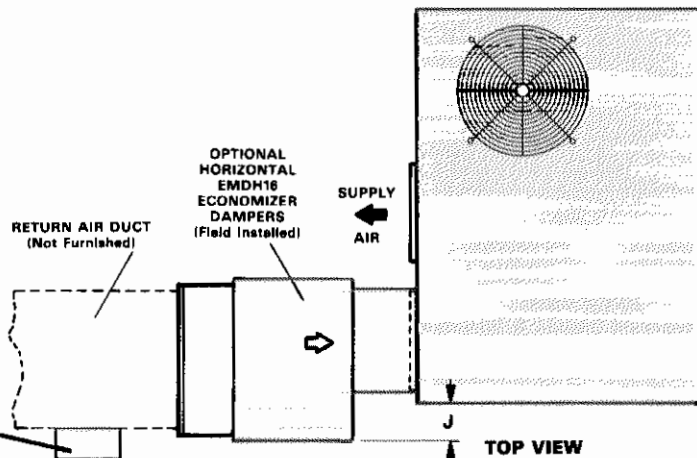
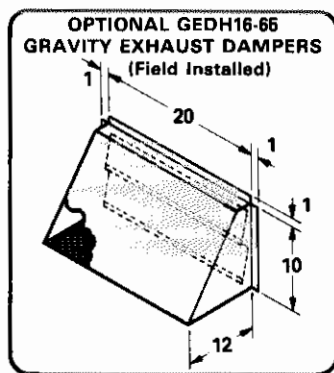
| Model No. | EE | FF |
|------------------|--------|----------|
| CHA16(R)-411-413 | 32-3/8 | 21-1/4 |
| CHA16(R)-511-513 | 41-5/8 | 23-15/16 |
| CHA16(R)-651-653 | 40-1/4 | 24-9/16 |



| Model No. | A | B | C | D | E | F | *G | *H | J |
|------------------|----|--------|----|--------|--------|-------|-----|-----|-------|
| CHA16(R)-411-413 | 46 | 60 | 23 | 21-3/4 | 16-1/8 | 3/4 | --- | --- | --- |
| CHA16(R)-511-513 | 52 | 72-1/2 | 29 | 27-3/4 | 20-1/4 | 1-1/2 | 7 | 16 | 3-1/2 |
| CHA16(R)-651-653 | | | | | | | | | |

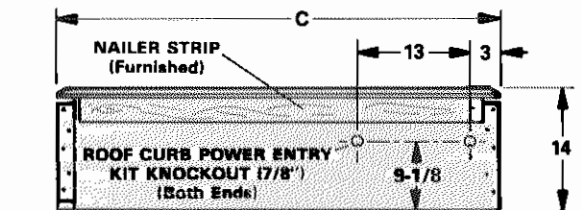
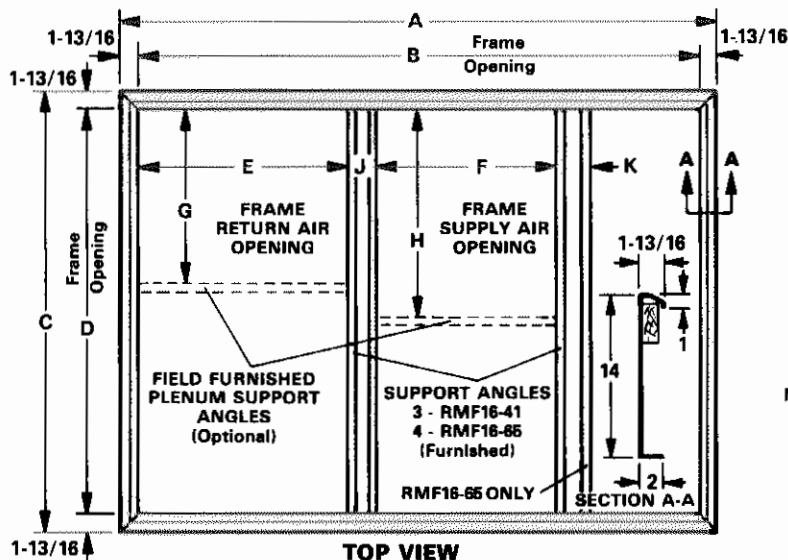
*Dimensions reflect usage with RMF16-41 mounting frame.

CHA16 UNIT WITH EMDH16 HORIZONTAL ECONOMIZER DAMPER SECTION
AND GEDH16-65 GRAVITY EXHAUST DAMPERS



| Model No. | A | B | C | D | E | F | G | H | J | K | L |
|------------------|--------|--------|--------|----|----|--------|-------|-------|---|--------|----|
| CHA16(R)-411-413 | 63 | 81-1/2 | 26 | 23 | 46 | 26 | 9-1/2 | 3 | 3 | 24 | 13 |
| CHA16(R)-511-513 | 79-1/2 | 90 | 30-3/8 | 29 | 52 | 30-1/2 | 12 | 1-1/2 | 7 | 28-7/8 | 22 |
| CHA16(R)-651-653 | | | | | | | | | | | |

DIMENSIONS (Inches)
RMF16-41 & 65 ROOF MOUNTING FRAME
WITH DOUBLE DUCT OPENING FOR CHA16 UNITS

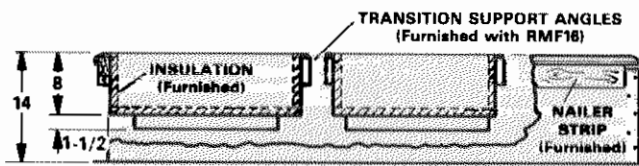


END VIEW

| Model No. | A | B | C | D | E | F | G | H | J | K |
|-----------|--------|--------|--------|--------|--------|---------|--------|---------|----|-----|
| RMF16-41 | 56-3/8 | 52-3/4 | 44-7/8 | 41-1/4 | 24-3/8 | 20-9/16 | 20-3/8 | 24-9/16 | *4 | --- |
| RMF16-65 | 69 | 65-3/8 | 50-1/2 | 46-7/8 | 24-1/4 | 20-1/2 | 20-1/2 | 24-1/2 | 4 | 4 |

*3-1/4 inches with CHA16-410 units.

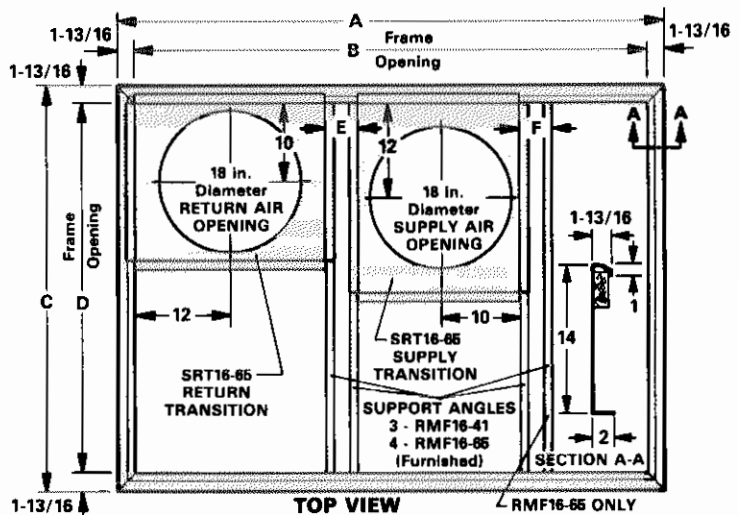
RMF16-41 & 65 ROOF MOUNTING FRAME FOR CHA16 UNITS WITH SRT16-65
SUPPLY AND RETURN AIR TRANSITIONS FOR FD9-65 & RTD9-65 CEILING DIFFUSERS



SIDE VIEW

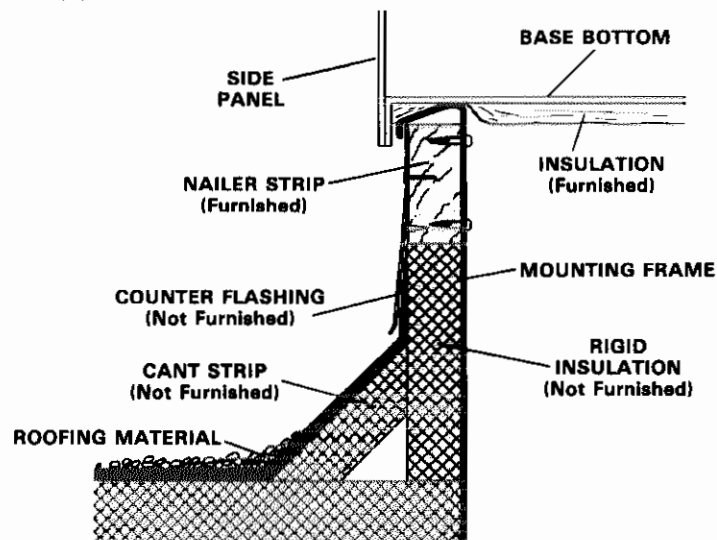
| Model No. | A | B | C | D | E | F |
|------------------------|--------|--------|--------|--------|----|-----|
| RMF16-41 with SRT16-65 | 56-3/8 | 52-3/4 | 44-7/8 | 41-1/4 | *4 | --- |
| RMF16-65 with SRT16-65 | 69 | 65-3/8 | 50-1/2 | 46-7/8 | 4 | 4 |

*3-1/4 inches with CHA16-410 units.



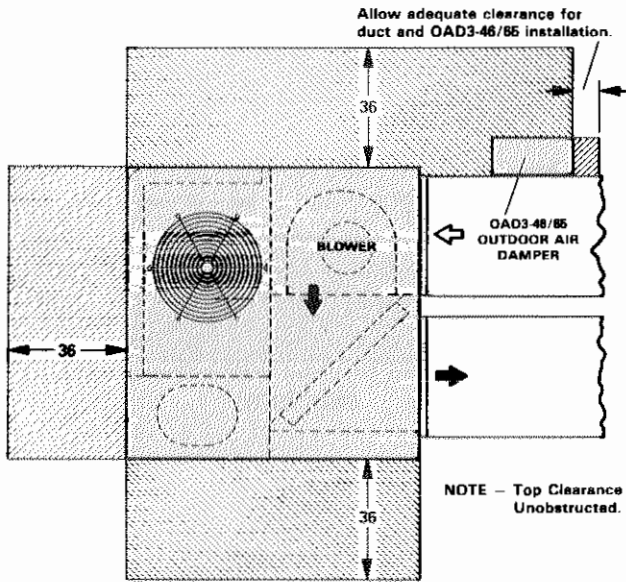
TOP VIEW

TYPICAL FLASHING FOR RMF16-41 & 65
ROOF MOUNTING FRAMES WITH CHA16 SERIES UNITS

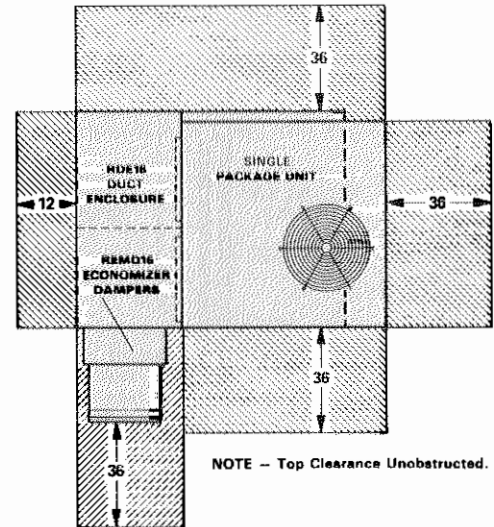


INSTALLATION CLEARANCES (inches)

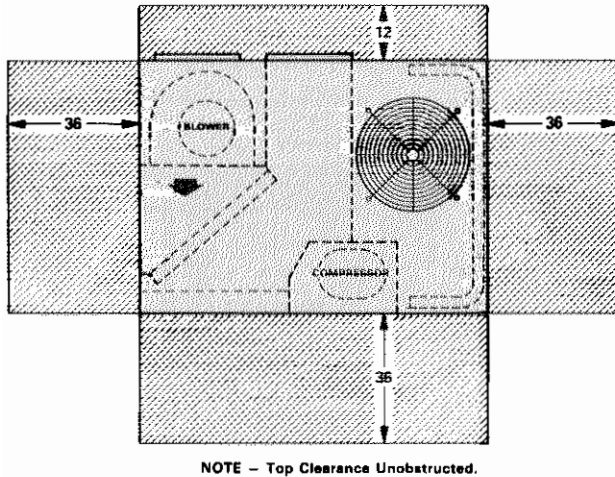
**CHA16H BASIC UNIT WITH
OAD3-46/65 OUTDOOR AIR DAMPER**



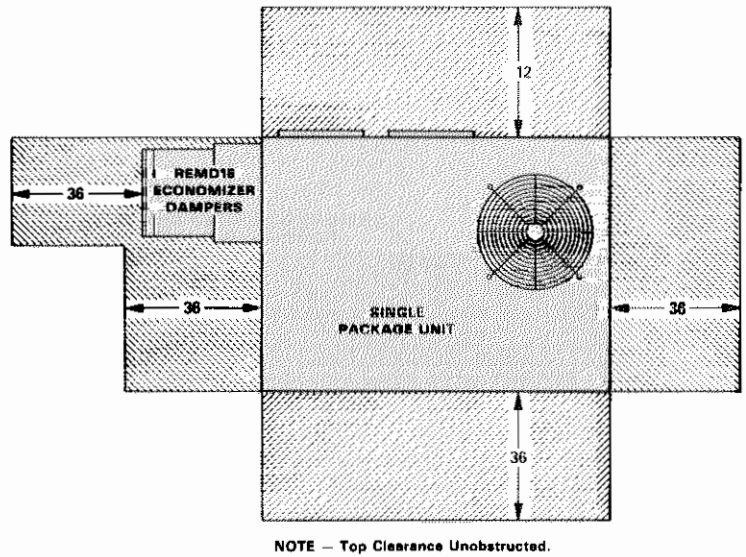
**CHA16H UNIT WITH RDE16-31 DUCT ENCLOSURE
AND REMD16-41 ECONOMIZER**



CHA16(R) BASIC UNIT



CHA16 UNIT WITH REMD16 ECONOMIZER



**CHA16 UNIT WITH EMDH16 ECONOMIZER AND
GEDH16-65 GRAVITY EXHAUST DAMPERS**

