

**CHP16-953-1353
PACKAGED HEAT PUMPS**

***88,000 to 117,000 Btuh (25.8 to 34.3 kW) Cooling Capacity**
***90,000 to 119,000 Btuh (26.4 to 34.9 kW) Heating Capacity**
25,600 to 170,600 Btuh (7.5 to 50.0 kW) Optional Electric Heat

*ARI Standard Ratings

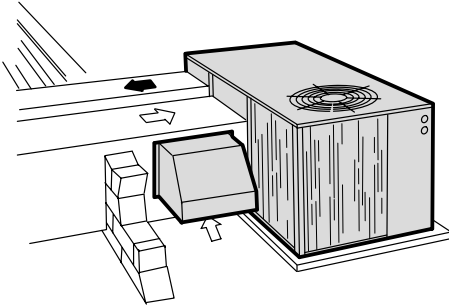
CHP16
(7.5 & 10 Ton)
(26.4 & 35.2 kW)

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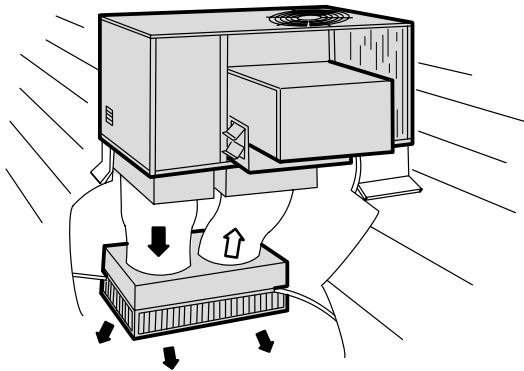
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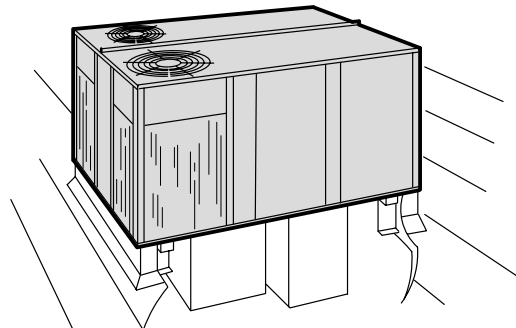
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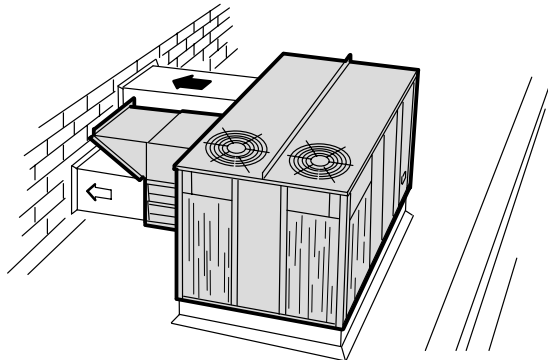
Horizontal (Side) Supply and Return Air Installation with OAD16 Outdoor Air Dampers.



Down-Flo Supply and Return Air Installation With RMF16 Roof Mounting Frame, REMD16M Economizer and RTD11 Ceiling Diffuser.



Down-Flo Supply and Return Air Installation With RMF16 Roof Mounting Frame.



Horizontal (Side) Supply and Return Air Installation with RMF16 Roof Mounting Frame and EMDH16M Economizer Dampers.



CHP16-1353
With Optional REMD16M Economizer Dampers

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FEATURES

Application — Lennox CHP16 single package heat pump units are designed for bottom (down-flo) or side (horizontal) handling of supply and return air. A separate roof mounting frame mates to the unit base and when flashed into the roof permits weatherproof duct connections and entry into the conditioned area in down-flo applications. The units can also be installed at grade level with horizontal (side) duct connections. A choice of RTD11 step-down or FD11 flush ceiling diffusers are available for combination ceiling supply and return air distribution systems. Optional economizer dampers provide “free cooling” by using outdoor air in lieu of mechanical refrigeration. Units are available with supplemental electric heat. Voltage options provide a choice for power supply requirements. Thermostat and system controls are not furnished and must be ordered extra. Available as options are W973 control system, W7400 control system, ⚡ T8621 Electronic Thermostat, electro-mechanical or T7300 control systems. Units are shipped factory assembled, piped and wired. Each unit is factory test operated insuring unit dependability.

Approvals — Units have been rated in the Lennox Laboratory environmental test room in accordance with ARI Standard 210/240-89. Units have been rated in the Lennox sound test room in accordance with conditions included in ARI Standard 270-84. Blower data is from unit tests in the Lennox air test chamber. Units are U.L. and C.S.A. Listed and components within are bonded for grounding to meet safety standards for servicing required by U.L., C.S.A., NEC and CEC.

Equipment Warranty — The compressors have a limited warranty for a full 5 years. All other components have a limited warranty for one year. Refer to Lennox Equipment Limited Warranty included with the equipment.

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 a 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. Electrical inlets are provided in cabinet base and outdoor coil section cabinet panel for wiring entry. Control box with factory installed controls is conveniently located for service access. A low voltage terminal strip is provided in the control box for ease of field wiring connections. Lifting brackets are furnished for ease of handling and rigging. Indoor coil condensate drain connection extends outside of cabinet for ease of connection.

Copper Tube Indoor and Outdoor Coils — Extra large surface area and circuiting of coils provide maximum efficiency, excellent heat transfer and low air resistance. Coils are constructed of precisely spaced rippled aluminum fins fitted to durable copper tubes. Fins are equipped with collars that grip tubing for maximum contact area. CHP16-953 and -1353 have enhanced fins on the outdoor coils. 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. The indoor coil is face split with two separate circuits. Each circuit has its separate expansion valve, compressor and refrigerant charge.

Outdoor Coil Fan(s) — CHP16-953 is equipped with a single fan and CHP16-1353 units have two. Direct drive fan(s) draw large air volumes uniformly through outdoor coils and discharges it vertically. Fan orifice design and low fan tip speed keeps operating sound level at a minimum. Uniform air flow through the coil results in high refrigerant cooling capacity. Permanently lubricated, overload protected fan motor is totally enclosed for maximum protection from rain, dust and corrosion. Motor is resiliently mounted. Corrosion resistant PVC coated steel wire fan guard(s) are furnished.

Air Filters — Disposable frame type two inch (51mm) thick filters are furnished as standard. Media is pleated non-woven cotton fabric for maximum efficiency. Filters are readily accessible for service. Filter rack is designed to accept one inch (25mm) thick cleanable filters.

Powerful Supply Air Blower — Belt drive centrifugal blower delivers large air volume efficiently and with minimum power consumption. Blower wheel is heavy duty, with forward curved blades and double inlet. Wheel is statically and dynamically balanced to eliminate vibration and designed to give maximum air delivery. Bearings are heavy duty, self aligning, permanently sealed and lubricated. Design of motor mounting base permits quick and simple motor changeover, belt tension adjustment or belt changing. Adjustable motor pulley allows for variable speed adjustments. Motor is overload protected. See specifications table for motors and drives available.

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

Refrigeration System — Factory sealed refrigerant system consists of compressors, outdoor coils and direct drive fans, indoor (dual circuits) coil and blower, check and expansion valves, high capacity driers, defrost control, high pressure switches, loss of charge switches, reversing valves, suction line accumulators, thermometer wells, refrigerant lines connected and a full operating charge of refrigerant. Dual independent refrigerant circuits provide staging control to fit varying cooling loads.

Defrost Control — A solid state clock timer defrost control provides a defrost cycle, if needed, every 30 or 60 or 90 minutes (adjustable) of compressor “on” time at outdoor temperature below 45°F (7°C). A pressure switch mounted on the outdoor coil vapor line determines when the defrost cycle is required and also when to terminate a cycle.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

ECH16 Supplemental Electric Heat (Optional) — Available factory or field installed in 10kW through 50kW sizes. Helix wound nichrome heating elements are exposed directly in the air stream resulting in instant heat transfer, lower coil temperatures and long service life. Elements are accurately located and insulated from the heavy gauge steel support frame by high quality insulators. Time delays bring the elements on and off the line in sequence and equal increments in response to demand with a time delay between each element. Elements are equipped with individual limit controls providing positive protection in case of overheating. Heaters may be two stage controlled with each stage being energized only when required. Fuse block for electric heaters must be ordered extra, see Optional Accessories Tables. Factory installed heaters will have the fuse block factory installed. Fuse block must be field installed on field installed heaters. Wiring harness and mounting screws are provided with fuse block.

Bottom Power Entry Kit (Optional) — Factory or field installed kit LB-55757CA (34G70) is provided for bottom power entry into the unit within the confines of the roof mounting frame. Kit contains wiring junction box with cover 6” x 8” x 10” (152mm x 203mm x 254mm), 78 inch (2.0m) length of armored cable and necessary installing hardware. Galvanized steel junction box with prepunched mounting holes and electrical knockouts installs on electrical inlet openings located in the unit base. Kit must be ordered extra. See basic unit dimension drawing.

Timed-Off Control (Optional) — Timed-off control is available for field installation. Prevents compressor short-cycling. Automatic reset control provides a time delay between compressor shutoff and start-up. Kit (40G20) includes two LB-50709BA controls and must be ordered extra.

Low Ambient Kit (Optional) — Outdoor units will operate satisfactorily in the cooling mode down to 45°F (7°C) outdoor air temperature without any additional controls. For cases where operation of the unit is required at lower ambients, a Low Ambient Control Kit can be added in the field, enabling it to operate properly down to 30°F (-1°C). See Optional Accessories tables.

RMF16 Roof Mounting Frame (Optional) — Sturdy mounting frame mates to the unit and provides an automatic weather sealed rooftop installation. Shipped knocked down for ease of shipping and handling it is easily field assembled. A nailer strip is secured to the frame sides to facilitate flashing. Approved by National Roofing Contractors Association.

OPTIONAL ACCESSORIES (Must Be Ordered Extra)

REMD16M Economizer Dampers (Optional) — Economizer consists of: mechanically linked recirculated air dampers and outdoor air dampers, damper motor and controls. Economizers are shipped factory wired and only require plug-in connection. Formed low leakage (less than 3%) dampers rotate smoothly in nylon bearings. Outdoor air dampers are equipped with stainless steel seals for minimum air leakage. The positioning of the dampers is accomplished with a 24 volt fully modulating spring return damper motor with adjustable minimum damper position switch. Damper motor is controlled by the room thermostat, mixed air controller and solid-state adjustable outdoor air enthalpy control. The enthalpy control allows for 0 to 100% outdoor air (first stage of cooling) to be used for "free cooling" when outdoor humidity and temperature are acceptable. Additionally, an integrated economizer cycle can be accomplished by allowing the outside air dampers to remain open, continuing to admit outside air, and cycling the compressors to provide dehumidification and additional cooling, as needed. The integrated economizer cycle uses only the amount of mechanical cooling necessary. Two cleanable polyurethane media frame filters are furnished for extra air filtering and bird screen protection.

REMD16M-95 & 135 are available for down-flo applications only. Economizer cabinet is constructed of heavy gauge galvanized steel with a powder enamel paint finish electrostatically bonded to the metal and completely insulated with thick fiberglass insulation. Economizer cabinet field installs on the unit cabinet. Provisions have been made in the economizer cabinet for easy field installation of optional GED16 gravity exhaust dampers. See dimension drawings.

EMDH16M Horizontal Economizer Dampers (Optional) — The EMDH16M horizontal economizer cabinet section contains recirculated air dampers, outdoor air dampers, damper motor and controls. Economizer section field installs on the unit cabinet. Outdoor air hood is shipped separately and is field installed. Economizer is factory assembled and wired and only requires field plug-in connection. Cabinet is constructed of heavy gauge galvanized steel with a powder enamel paint finish electrostatically bonded to the metal. Completely insulated with thick fiberglass insulation. Recirculated damper section of cabinet has flanged air openings for ease of duct connection. Formed low leakage (less than 3%) dampers rotate smoothly in nylon bearings. Outdoor air damper blades are equipped with stainless steel seals for minimum air leakage. The positioning of the dampers is accomplished with a 24 volt fully modulating spring return damper motor with adjustable minimum damper position switch. Damper motor is controlled by the room thermostat, mixed air controller and solid-state adjustable outdoor air enthalpy control. The enthalpy control allows for 0 to 100% outdoor air (first stage of cooling) to be used for "free cooling" when outdoor humidity and temperature are acceptable. Additionally, an integrated economizer cycle can be accomplished by allowing the outside air dampers to remain open, continuing to admit outside air, and cycling the compressors to provide dehumidification and additional cooling as needed. The integrated economizer cycle uses only the amount of mechanical cooling necessary. Two cleanable polyurethane media frame filters are furnished for extra air filtering and bird screen protection. See dimension drawing. Provisions have been made in the economizer cabinet for easy field installation of optional GED16 gravity exhaust dampers. Requires Optional Horizontal Supply and Return Air Kit for duct connection to unit. See Optional Accessories tables.

GED16 Gravity Exhaust Dampers (Optional) — Optional for use with REMD16M and EMDH16M-95 & 135 economizer damper sections and must be ordered extra. Openings are provided in the economizer cabinet for easy field installation. See dimension drawing. Two exhaust dampers are furnished for installation on the economizer section. Rainhoods are also furnished for field installation. Neoprene coated fiberglass dampers prevent blow-back and outdoor air infiltration during off cycle. Bird screen is provided.

Differential Enthalpy Control (Optional) — A solid-state return air enthalpy sensor is available to be used 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 return air section and must be ordered extra.

OAD16 Outdoor Air Damper Section (Optional) — Damper section with factory installed and linked dampers field installs external to the unit cabinet and must be ordered extra. Interchangeable unit cabinet panel with opening for installation is furnished with damper for down-flo air applications. See unit dimension drawing for location. Damper section field installs in return air duct for horizontal supply and return air applications. A cleanable polyurethane media frame type air filter is furnished and factory installed. Dampers allow a fixed amount of outdoor air into the system and can be adjusted for air quantities up to 25%. Damper section is available for manual or automatic operation. Manually operated dampers may be adjusted and locked in place for the amount of air desired. Automatic operation is available with the addition of a spring return 3 position damper actuator. Actuator only requires plug-in connection for operation. Automatic OAD16 Damper Kit (35G21) must be ordered extra.

Horizontal Supply & Return Air Kit (Optional) — Provides horizontal supply and return air duct connection to the side of the unit. Kit contains duct connection flanges for field installation on the supply and return air openings, screws for installing, two filler panels for supply and return air openings in the unit base not being used and a filter access panel to replace the existing cabinet panel above the return air opening. Kit must be ordered extra. See Optional Accessories tables.

RTD11 Combination Ceiling Supply and Return Diffuser Assembly (Optional) — Step-down mount diffuser extends slightly below ceiling level 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 flanges for ease of duct connection, hanging rings for suspending and 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 Optional Accessories tables.

FD11 Combination Ceiling Supply and Return Diffuser Assembly (Optional) — 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 flanges for ease of duct connections, support hanger eyelets at the top corners for secure installation and 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 Optional Accessories tables.

SRT16 Supply and Return Transitions (Optional) — 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 flanges for ease of duct connection. Duct from the transitions to the diffuser is not furnished and must be provided by installer. Transitions are completely factory assembled and easily field installed in the roof mounting frame with minimum costs and labor requirements. Must be ordered extra, see Optional Accessories tables. SRT16-95 transitions are used with the RMF16-95 roof mounting frame, SRT16-135 is used with the RMF16-135/160.

OPTIONAL TEMPERATURE CONTROL SYSTEMS

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 emergency heat subbase and relay kit (**49G09**) with manual system switch (Off-Emergency Heat-Heat-Auto-Cool), fan switch (Auto-On) and red emergency heat indicator LED. Also available is a 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. 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 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 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. See Price Book for time clock selection and catalog numbers. Also available is a Warm Up Kit (**39G77**) which holds the economizer outdoor air dampers closed during nite heat operation and morning warm up. Cycle Control (**42H52**) is required with CHP16-953 and -1353 units. Control with plug-in connections provides a timed-on and timed-off function to prevent compressor short-cycling. See Flowchart on page 5.

W973 Control System (Optional) — 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 switching subbase (**58C94**) with system selector switch (Cool-Auto-Heat-Emergency Heat) and fan switch (On-Auto-Off). 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 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 automatically programs the system to keep the 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. See Price Book for time clock selection and catalog numbers. Also available is a Warm Up Kit (**39G77**) which holds the economizer outdoor air dampers closed during nite heat operation and warm up. See Flowchart on page 5.

✦ **T8621 Electronic Thermostat and Control System (Optional)** — T8621 auto change, 2heat/2cool (**75E27**) programmable thermostat has a switching subbase and full independent 7 day programming. Thermostat has four different time and temperature settings per day. One LED is used to indicate System "ON". T8621 thermostat has instant override capabilities for skipping current program, running previous program, temporarily raising or lowering for current program or overriding program indefinitely. Three "AAA" alkaline batteries protect programs in case of power failure. SP11 Remote Status Panel (**12F83**) is available for checking unit operation within the conditioned area. See Flowchart on page 6.

W7400 Control System (Optional) — 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**) or (☼ **36G63**) with integral sensor that installs in the conditioned space or a remote thermostat (**36G64** or (☼ **36G65**) 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 Flowchart on page 6.

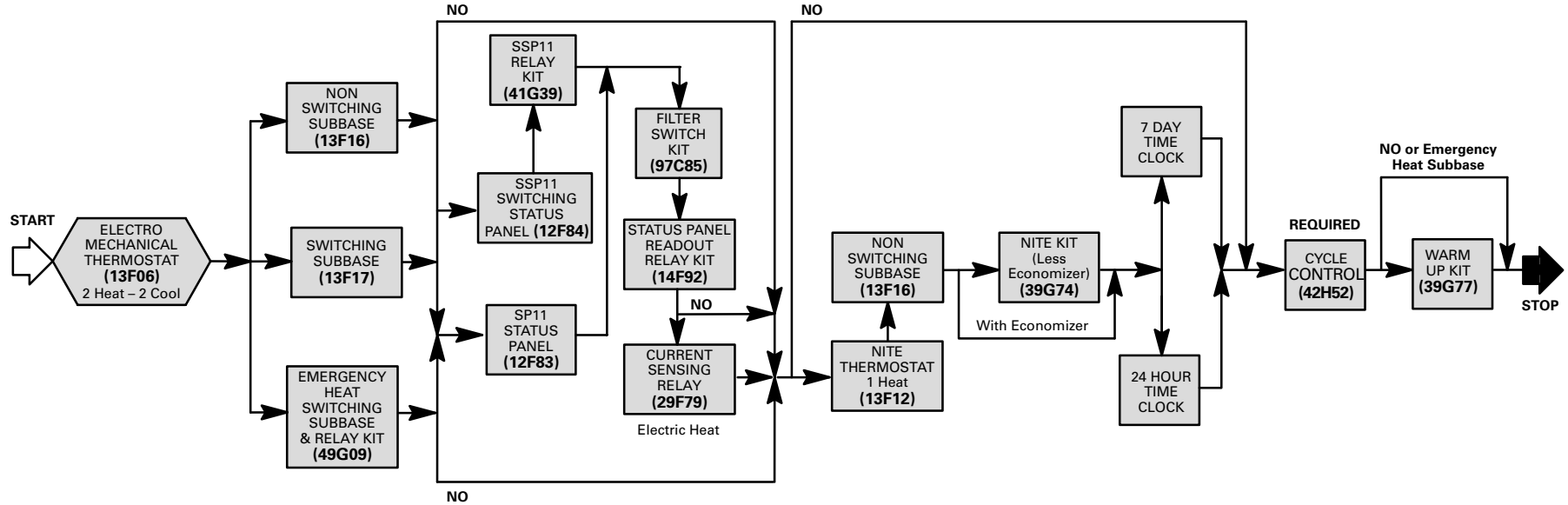
T7300 Thermostat and Control System (Optional) — The thermostat and related controls of this system must be ordered extra for field installation. T7300 programmable thermostat (**81G59**) has internal or optional remote temperature sensing, touch sensitive keyboard, automatic switching from heat to cool, °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**) features selectable output staging up to two heat and two cool, indicator LED's, manual system switch (Heat-Off-Auto-Cool) and fan switch (Auto-On). 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 Flowchart on page 6.

SP11 Remote Status Panel (Optional) — The operation of the unit can be checked at a glance on the Remote Status Panel (**12F83**) 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 and Compressor 2 lights are green when operating and will turn red if there is an operational malfunction. The No Heat and Filter lights will show red and indicate a requirement for service. The following field installed controls are required for use with the status panel and must be ordered extra. Filter Switch Kit (**97C85**) is required for operation of the filter light. Status Panel Readout Relay Kit (**14F92**) is required to interface status panel with unit operation. Current Sensing Relay (**29F79**) is required with electric heat for operation of the No Heat light.

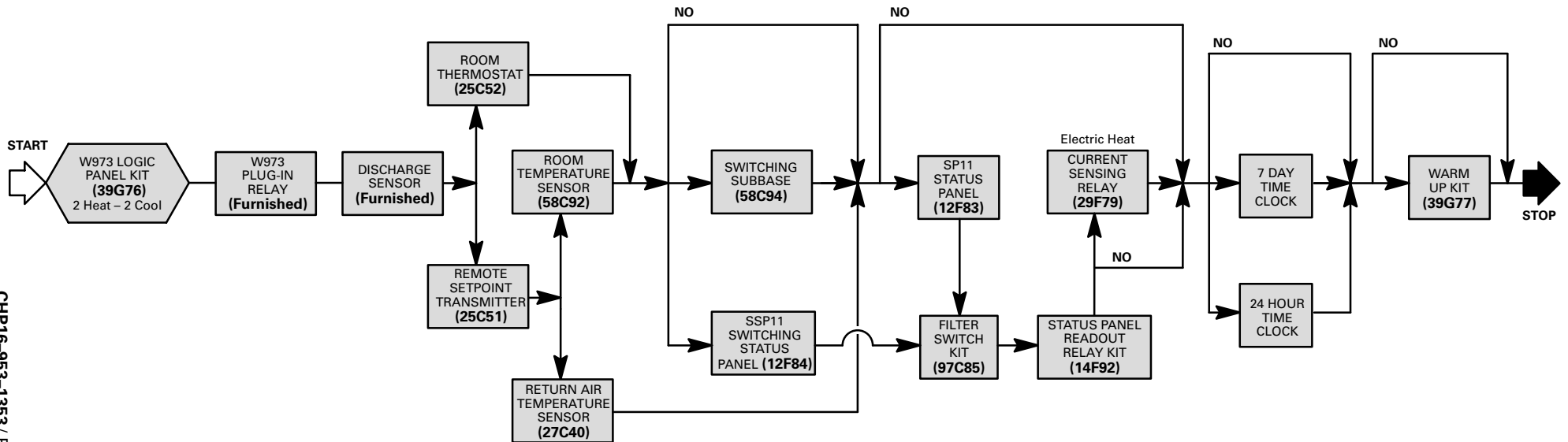
SSP11 Remote Switching Status Panel (Optional) — The operation of the unit can be controlled and observed on the Switching Status panel (**12F84**) conveniently located within the conditioned area. Signal lights on the panel indicate "Cool Mode", "Heat Mode", "Compressor 1", "Compressor 2", "No Heat" 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 and Compressor 2 lights are green when operating and will turn red if there is an operational malfunction. The No Heat and Filter lights will show red and indicates a requirement for service. Additionally, panel is equipped with a system selector switch (Off — Heat — Auto — Cool — Emergency Heat) (Heat Pump Only), fan switch (Auto — On) and after hours timer. Fan switch provides a choice of intermittent (Auto) or continuous (On) blower operation. Manually operated after hours timer (0 to 12 hours) overrides night setback controls providing normal operation for time period set. A momentary push button switch is used to initiate the timer period. The following field installed controls are required for use with the status panel and must be ordered extra. Filter Switch Kit (**97C85**) is required for operation of the filter light. Status Panel Readout Relay Kit (**14F92**) is required to interface status panel with unit operation. Current Sensing Relay (**29F79**) is required with electric heat for operation of the No Heat light.

TEMPERATURE CONTROL SELECTION FLOWCHARTS

OPTIONAL ELECTRO-MECHANICAL THERMOSTAT

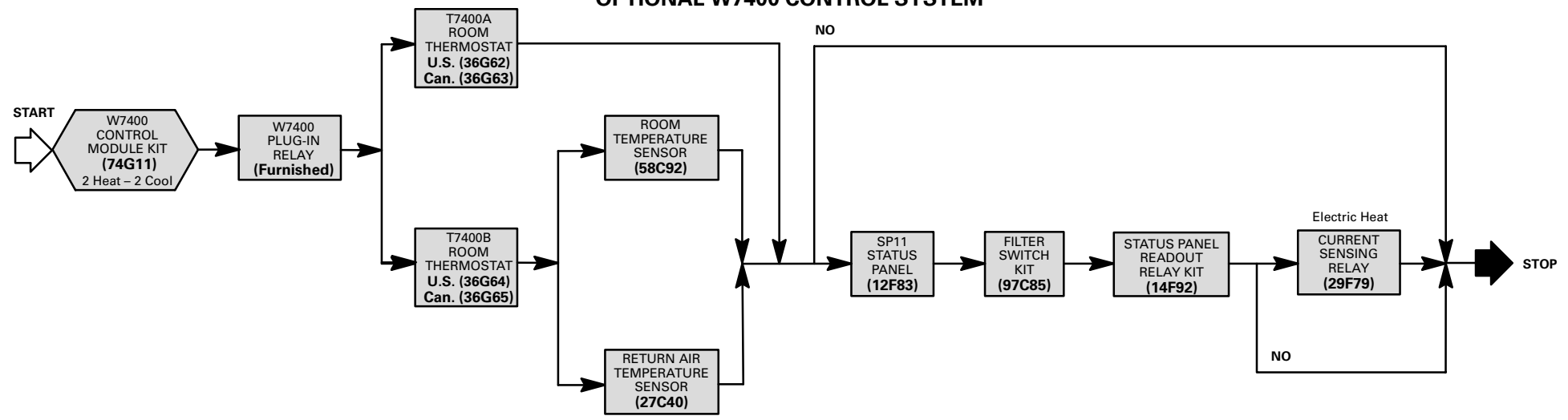


OPTIONAL W973 CONTROL SYSTEM

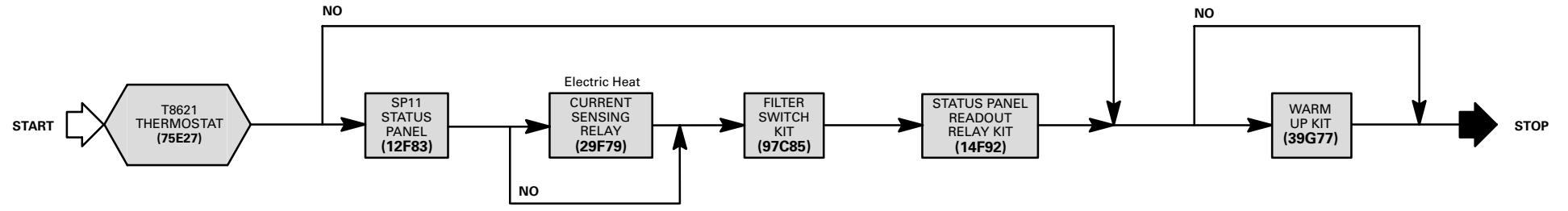


TEMPERATURE CONTROL SELECTION FLOWCHARTS

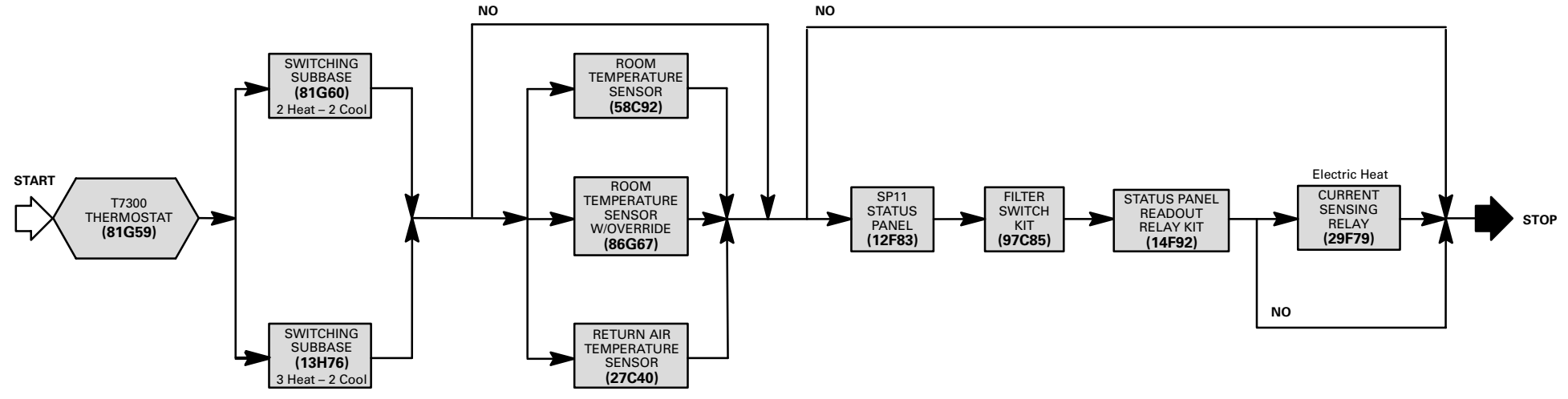
OPTIONAL W7400 CONTROL SYSTEM



OPTIONAL T8621 THERMOSTAT CONTROL SYSTEM



OPTIONAL T7300 CONTROL SYSTEM



SPECIFICATIONS – CHP16-953 & CHP16-1353

Model No.		CHP16-953	CHP16-1353	
*ARI Standard 210/240 Ratings	ARI Certified Cooling Ratings	Cooling Capacity – Btuh (kW)	88,000 (25.8)	117,000 (34.3)
		Total unit watts cooling	9,780	13,150
		EER (Btuh/Watts)	9.0	8.90
		Integrated Part Load Value	9.3	8.6
	High Temperature Heating Ratings	Total Capacity – Btuh (kW)	90,000 (26.4)	119,000 (34.9)
		Total unit watts	8,500	11,620
		C.O.P	3.10	3.00
	Low Temperature Heating Ratings	Total Capacity – Btuh (kW)	46,000 (13.5)	64,000 (18.8)
		Total unit watts	6,740	9,375
		C.O.P	2.00	2.00
Sound Rating Number (bels)		8.4	8.8	
Refrigerant (22) Charge	Stage 1	7 lbs. 8 oz. (3.4 kg)	13 lbs. 4 oz. (6.0 kg)	
	Stage 2	8 lbs. 12 oz. (4.0 kg)	13 lbs. 4 oz. (6.0 kg)	
Indoor Coil Blower and Drive Section	Blower wheel nominal diameter x width – in. (mm)		12 x 12 (305 x 305)	15 x 15 (381 x 381)
	**Factory Installed Drives	Motor horsepower (W) nom. – max.	2 (1492) – 2.30 (1716)	2 (1492) – 2.30 (1716)
		Voltage & phase	208/230/460v or 575v -3ph	208/230/460v or 575v -3ph
		RPM range	740 – 1010	730 – 950
	**Optional Factory Installed Drives	Motor horsepower (W) nom. – max.	----	3 (2238) – 3.45 (1213)
		Voltage & phase	----	208/230/460v or 575v -3ph
RPM range		----	730 – 950	
Indoor Coil	Net face area – sq. ft. (m ²)		7.75 (0.72)	9.46 (0.88)
	Tube diameter – in. (mm) & No. of rows		3/8 (9.5) – 4	3/8 (9.5) – 5
	Fins per inch (m)		14 (551)	14 (551)
Outdoor Coil	Net face area – sq. ft. (m ²)		15.67 (1.46)	23.45 (2.18)
	Tube diameter – in. (mm) & No. of rows		3/8 (9.5) – 3	3/8 (9.5) – 3
	Fins per inch (m)		20 (787)	20 (787)
Outdoor Coil Fan(s)	Diameter – in. (mm) & No. of blades		24 (610) – 4	(2) 22 (559) – 4
	Air Volume – cfm (L/s)		5000 (2360)	7700 (3635) total
	Motor horsepower (W)		3/4 (560)	(2) 1/2 (373)
	Motor watts		635	950 total
Condensate drain size mpt – in. (mm)		1 (25)	1 (25)	
No. & size of filters	in	(4) 16 x 20 x 2	(4) 16 x 25 x 2	
	mm	(4) 406 x 508 x 51	(4) 406 x 635 x 51	
Net weight of basic unit – lbs. (kg) 1 Package		860 (390)	1120 (508)	
Electrical characteristics		208/230v, 460v or 575v – 3 ph		

° Sound Rating Number in accordance with test conditions included in ARI Standard 270.

*Rated in accordance with ARI Standard 210/240.

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

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

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

Integrated Part Load Value rated at 80 F (27 C) outdoor air temperature.

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

OPTIONAL ACCESSORIES — CHP16-953 & 1353 (Must Be Ordered Extra)

Unit Model No.		CHP16-953		CHP16-1353		
Electric Heat	Model No.	ECH16-82/95		ECH16-135/160		
	kW input range	10-15-20-30-40		15-20-30-40-50		
	*Fuse Block	208/230 volt	61H83		72G10	
		460 volt	61H84		72G11	
575 volt		61H85		72G12		
Roof Mounting Frame — (Net Weight)		RMF16-95 (107 lbs.) (49 kg) (42G01)		RMF16-135/160 (119 lbs.) (54 kg) (42G02)		
Economizer Dampers — (Net Weight) (No.) & size of filters in. (mm)		REMD16M-95 (118 lbs.) (54 kg) (74G22) (2) 16 x 25 x 1 (406 x 635 x 25)		REMD16M-135 (125 lbs.) (57 kg) (74G23) (2) 16 x 25 x 1 (406 x 635 x 25)		
Horizontal Economizer Dampers — (Net Weight) (No.) & size of filters in. (mm)		EMDH16M-95 (120 lbs.) (54 kg) (24H03) (2) 16 x 25 x 1 (406 x 635 x 25)		EMDH16M-135 (137 lbs.) (62 kg) (24H04) (2) 16 x 25 x 1 (406 x 635 x 25)		
Exhaust Dampers — (Net Weight)		GED16-95/135/160 (5 lbs.) (2 kg) (34G80)				
Differential Enthalpy Control		54G44				
Horizontal Supply and Return Air Kit — (Net Weight)		LB-55756BA (30 lbs.) (14 kg) (34G71)		LB-55756BB (35 lbs.) (16 kg) (35G42)		
Bottom Power Entry Kit (LB-55757CA) — (Net Weight)		34G70 (12 lbs.) (5 kg)				
Ceiling Supply and Return Air Diffusers (Net Weight)	Step-Down	RTD11-95 (88 lbs.) (40 kg) (29G04)		RTD11-135 (125 lbs.) (57 kg) (29G05)		
	Flush	FD11-95 (75 lbs.) (34 kg) (29G08)		FD11-135 (95 lbs.) (43 kg) (29G09)		
	Transition	SRT16-95 (29 lbs.) (13 kg) (33G96)		SRT16-135 (38 lbs.) (17 kg) (97H10)		
Outdoor Air Dampers — Net Weight No. & size of filters in. (mm)		OAD16-95 (41 lbs.) (19 kg) (35G26) (1) 16 x 20 x 1 (406 x 508 x 25)		OAD16-135 (43 lbs.) (20 kg) (35G25) (1) 16 x 20 x 1 (406 x 508 x 25)		
Automatic OAD16 Damper Kit — (Net Weight)		35G21 (7 lbs.) (3 kg)				
Low Ambient Control Kit		LB-57113BJ (16J87)		LB-57113BG (15J80)		
Timed-Off Control (2) LB-50709BA		40G20				

*Must be ordered extra. Factory installed heaters will have fuse block installed. Fuse block must be field installed in field installed heaters.

ELECTRICAL DATA — CHP16-953 & CHP16-1353

Model No.		CHP16-953			CHP16-1353						
Line voltage data — 60 Hz — 3 phase		208/230V	460V	575V	208/230V	460V	575V				
Compressors (2)	Rated load amps — each (total)	14.8/14.8 (29.6)	7.7/7.7 (15.4)	6.3/6.3 (12.6)	18.6/18.6 (37.2)	10.4/10.4 (20.8)	9.0/9.0 (18.0)				
	Locked rotor amps — each (total)	130/130 (260.0)	64/64 (128.0)	52/52 (104)	150/150 (300.0)	73/73 (146.0)	58/58 (116)				
Outdoor Coil Fan Motor(s)	Full load amps (total)	3.7	1.9	1.6	3.0/3.0 (6.0)	1.5/1.5 (3.0)	1.2/1.2 (2.4)				
	Locked rotor amps (total)	7.3	3.7	3.4	6.2/6.2 (12.4)	3.4/3.4 (6.8)	2.9/2.9 (5.8)				
Indoor Blower Motor	Motor Output	hp	2	2	2	2	3	2	3	2	3
		W	1492	1492	1492	1492	2238	1492	2238	1492	2238
	Full load amps	7.5	3.4	2.7	7.5	10.6	3.4	4.0	3.3	3.9	
	Locked rotor amps	41.0	20.4	16.2	41.0	58.0	20.4	26.8	16.2	23.4	
**Recommended maximum fuse size (amps)		50	30	20	70	70	35	35	30	30	
*Minimum Circuit Ampacity		45.0	23.0	19.0	56.0	59.0	30.0	32.0	26.0	27.0	
Unit power factor		.88	.88	.88	.88	.88	.88	.88	.88	.88	

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

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

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

OPTIONAL ELECTRIC HEAT DATA (Heater Fuse Block Must Be Ordered Extra)

CHP16-953 MODELS

CHP16-1353 MODELS

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kw Input	Btuh Output	*Total Unit & Electric Heat Minimum Circuit Ampacity
ECH16-82/95-10 208/230v (61H68) 460v (61H73) 575v (61H78) 38 lbs. (17 kg)	1	208	7.5	25,600	71.0
		220	8.4	28,700	
		230	9.2	31,400	75.0
	1	440	8.4	28,700	
		460	9.2	31,400	39.0
		480	10.0	34,100	
	1	550	8.4	28,700	
		575	9.2	31,400	31.0
		600	10.0	34,100	
ECH16-82/95-15 208/230v (61H69) 460v (61H74) 575v (61H79) 38 lbs. (17 kg)	1	208	11.3	38,600	84.0
		220	12.6	43,000	
		230	13.5	46,100	90.0
	1	440	12.6	43,000	
		460	13.8	46,100	46.0
		480	15.0	51,200	
	1	550	12.6	43,000	
		575	13.8	46,100	37.0
		600	15.0	51,200	
ECH16-82/95-20 208/230v (61H70) 460v (61H75) 575v (61H80) 42 lbs. (19 kg)	**2	208	15.0	51,200	97.0
		220	16.8	57,300	
		230	18.4	62,800	105.0
	1	440	16.8	57,300	
		460	18.4	62,800	53.0
		480	20.0	68,300	
	1	550	16.8	57,300	
		575	18.4	62,800	43.0
		600	20.0	68,300	
ECH16-82/95-30 208/230v (61H71) 460v (61H76) 575v (61H81) 42 lbs. (19 kg)	**2	208	22.5	76,800	123.0
		220	25.2	86,000	
		230	27.5	93,900	135.0
	1	440	25.2	86,000	
		460	27.6	93,900	68.0
		480	30.0	102,400	
	1	550	25.2	86,000	
		575	27.6	93,900	55.0
		600	30.0	102,400	
ECH16-82/95-40 208/230v (61H72) 460v (61H77) 575v (61H82) 53 lbs. (24 kg)	**3	208	30.0	102,400	149.0
		220	33.6	114,700	
		230	36.8	125,600	129.0
	1	440	33.6	114,700	
		460	36.8	125,600	83.0
		480	40.0	136,500	
	**2	550	33.6	114,700	
		575	36.8	125,600	67.0
		600	40.0	136,500	

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kw Input	Btuh Output	*Total Unit & Electric Heat Minimum Circuit Ampacity	
					2 hp (1492W)	3 hp (2238W)
ECH16-135/160-15 208/230v (72G21) 460v (72G26) 575v (72G31) 38 lbs. (17 kg)	1	208	11.3	38,600	95.0	98.0
		220	12.6	43,000		
		230	13.5	46,100	101.0	104.0
	1	440	12.6	43,000		
		460	13.8	46,100	53.0	54.0
		480	15.0	51,200		
	1	550	12.6	43,000		
		575	13.8	46,100	44.0	45.0
		600	15.0	51,200		
ECH16-135/160-20 208/230v (72G22) 460v (72G27) 575v (72G32) 42 lbs. (19 kg)	**2	208	15.0	51,200	108.0	110.0
		220	16.8	57,300		
		230	18.4	62,800	116.0	119.0
	1	440	16.8	57,300		
		460	18.4	62,800	60.0	62.0
		480	20.0	68,300		
	1	550	16.8	57,300		
		575	18.4	62,800	50.0	51.0
		600	20.0	68,300		
ECH16-135/160-30 208/230v (72G23) 460v (72G28) 575v (72G33) 42 lbs. (19 kg)	**2	208	22.5	76,800	134.0	137.0
		220	25.2	86,000		
		230	27.5	93,900	146.0	149.0
	1	440	25.2	86,000		
		460	27.6	93,900	75.0	77.0
		480	30.0	102,400		
	1	550	25.2	86,000		
		575	27.6	93,900	62.0	63.0
		600	30.0	102,400		
ECH16-135/160-40 208/230v (72G24) 460v (72G29) 575v (72G34) 53 lbs. (24 kg)	**3	208	30.0	102,400	160.0	163.0
		220	33.6	114,700		
		230	36.8	125,600	176.0	179.0
	1	440	33.6	114,700		
		460	36.8	125,600	90.0	92.0
		480	40.0	136,500		
	**2	550	33.6	114,700		
		575	36.8	125,600	74.0	75.0
		600	40.0	136,500		
ECH16-135/160-50 208/230v (72G25) 460v (72G30) 575v (72G35) 58 lbs. (26 kg)	**4	208	37.5	128,000	186.0	189.0
		220	42.0	143,300		
		230	46.0	157,000	206.0	209.0
	1	440	43.8	149,500		
		460	46.0	157,000	105.0	107.0
		480	50.0	170,600		
	**2	550	43.8	149,500		
		575	46.0	157,000	86.0	87.0
		600	50.0	170,600		

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

**May be used with two stage control.

NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. See Optional Accessories tables.

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

**May be used with two stage control.

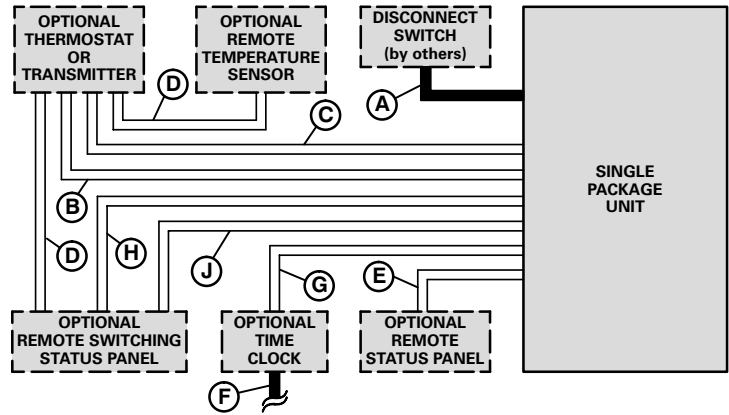
NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. See Optional Accessories tables.

W973 CONTROL SYSTEM

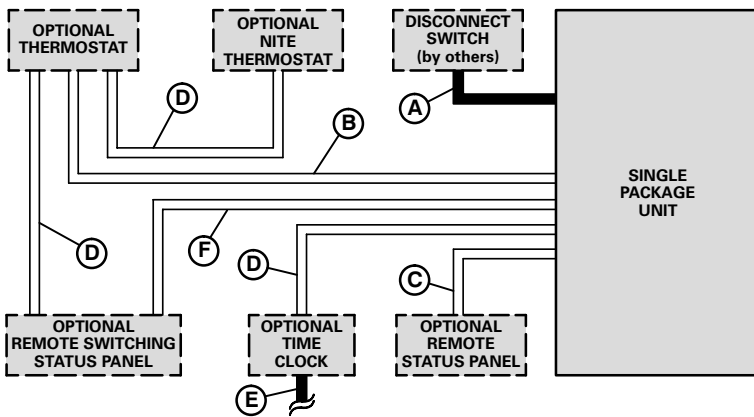
- A — Three wire power (See Electrical Data Table)
 - B — Seven wire low voltage — DC only
 - Five wire low voltage — DC only — with SSP11 Switching Status Panel
 - Eight wire low voltage — DC only — with switching subbase
 - C — Two wire low voltage — AC only — with switching subbase
 - D — Two wire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

NOTE — Run separate harnesses for AC and DC.
AC voltage interferes with DC signals.
— Field wiring not furnished —

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



ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



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

— Field wiring not furnished —

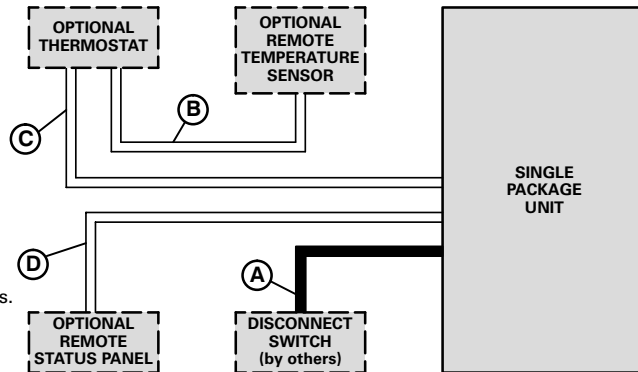
NOTE — All wiring must conform to NEC or CEC and local electrical codes.

W7400 CONTROL SYSTEM

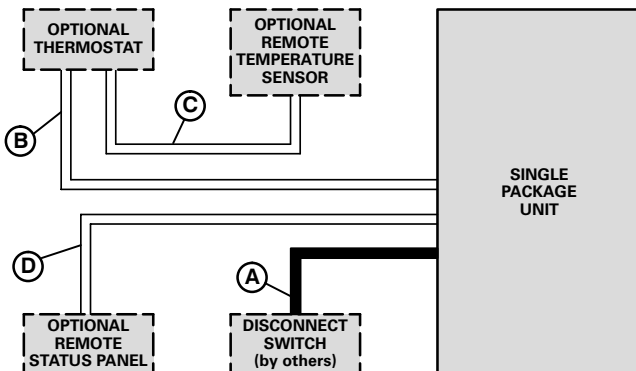
- A — Three wire power (See Electrical Data Table)
- B — Two wire low voltage
- C — Four wire low voltage
- D — Eleven wire low voltage

— Field wiring not furnished —

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



T7300 THERMOSTAT OR T8621 THERMOSTAT CONTROL SYSTEM



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

— Field wiring not furnished —

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

COOLING AND HEATING RATINGS

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

CHP16-953 — COOLING CAPACITY — ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)		
			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb		
L/s	cfm	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	
63°F (17.2°C)	1415	3000	16.1	54,900	2980	.73	.86	.98	15.4	52,500	3260	.74	.88	1.00	14.8	50,400	3550	.75	.90	1.00	14.1	48,200	3820	.77	.92	1.00
	1595	3375	16.4	56,000	3010	.75	.89	1.00	15.8	53,900	3290	.77	.91	1.00	15.1	51,700	3580	.78	.94	1.00	14.4	49,300	3860	.80	.96	1.00
	1770	3750	16.7	57,100	3030	.77	.93	1.00	16.1	54,800	3310	.80	.95	1.00	15.4	52,500	3610	.82	.97	1.00	14.7	50,300	3900	.83	.99	1.00
67°F (19.4°C)	1415	3000	16.9	57,800	3040	.58	.70	.83	16.3	55,500	3330	.58	.72	.85	15.6	53,200	3630	.59	.73	.87	14.9	51,000	3920	.60	.75	.89
	1595	3375	17.3	59,100	3070	.59	.73	.86	16.6	56,800	3360	.60	.74	.88	15.9	54,400	3670	.61	.76	.90	15.2	51,800	3960	.62	.78	.93
	1770	3750	17.6	60,000	3090	.60	.75	.89	16.9	57,800	3390	.61	.77	.91	16.2	55,400	3700	.62	.79	.94	15.5	53,000	4000	.64	.81	.96
71°F (21.7°C)	1415	3000	17.8	60,700	3110	.44	.56	.68	16.1	58,400	3410	.44	.57	.69	16.4	56,100	3730	.44	.57	.70	15.7	53,700	4030	.45	.59	.72
	1595	3375	18.2	62,000	3140	.44	.57	.70	17.5	59,600	3440	.44	.58	.72	16.7	57,100	3750	.45	.59	.73	16.1	54,700	4070	.45	.60	.75
	1770	3750	18.5	63,100	3150	.45	.59	.73	17.8	60,600	3470	.45	.60	.74	17.0	58,000	3780	.45	.61	.77	16.3	55,600	4100	.46	.62	.79

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

CHP16-953 — TOTAL COOLING CAPACITY — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T)		
			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb			kW	Btuh		Dry Bulb		
L/s	cfm	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	75°F	80°F	85°F	24°C	27°C	29°C	
63°F (17.2°C)	1415	3000	26.5	90,500	7130	.76	.90	1.00	25.3	86,400	7660	.77	.92	1.00	24.0	82,100	9150	.79	.95	1.00	22.7	77,700	8650	.81	.97	1.00
	1595	3375	27.2	92,800	7190	.78	.93	1.00	25.8	88,000	7730	.80	.96	1.00	24.5	83,800	8250	.82	.98	1.00	23.4	79,700	8760	.85	1.00	1.00
	1770	3750	27.6	94,200	7250	.81	.93	1.00	26.2	89,500	7790	.83	.99	1.00	25.0	85,400	8330	.85	1.00	1.00	23.9	81,500	8880	.88	1.00	1.00
67°F (19.4°C)	1415	3000	28.0	95,700	7300	.59	.73	.86	26.8	91,500	7860	.60	.75	.89	25.5	87,000	8410	.61	.77	.91	24.2	82,500	8940	.63	.79	.94
	1595	3375	28.6	97,700	7380	.61	.76	.90	27.3	93,200	7950	.62	.78	.92	26.0	88,700	8500	.63	.80	.95	24.7	84,300	9030	.65	.82	.98
	1770	3750	29.0	99,100	7450	.62	.78	.93	27.7	94,700	8020	.64	.81	.96	26.4	90,100	8580	.65	.83	.98	25.0	85,400	9110	.67	.85	1.00
71°F (21.7°C)	1415	3000	29.6	101,100	7510	.44	.58	.71	28.3	96,700	8110	.45	.59	.72	27.0	92,200	8680	.45	.60	.74	25.7	87,600	9240	.46	.61	.76
	1595	3375	30.2	103,100	7590	.45	.59	.73	28.9	98,600	8190	.45	.60	.75	27.5	93,900	8770	.46	.62	.77	26.1	89,000	9330	.46	.63	.80
	1770	3750	30.6	104,600	7650	.46	.61	.76	29.3	100,100	8260	.46	.62	.78	27.9	95,400	8850	.47	.64	.80	26.5	90,400	9410	.47	.65	.83

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

CHP16-953 — TOTAL HEATING CAPACITY — BOTH COMPRESSORS OPERATING

Indoor Coil Air Volume 70°F db (21°C db)	Air Temperature Entering Outdoor Coil																			
	65°F (18°C)				45°F (7°C)				25°F (-4°C)				5°F (-15°C)				-15°F (-28°C)			
	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input		
k/W	Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh	
1415	3000	33.6	114,700	7630	24.5	83,700	6430	14.6	50,000	5165	9.8	33,500	4295	4.7	16,000	3270				
1595	3375	34.3	117,000	7460	25.2	86,000	6260	15.3	52,300	4995	10.5	35,800	4125	5.4	18,300	3100				
1770	3750	34.8	118,900	7320	25.7	87,900	6120	15.9	54,200	4855	11.0	37,700	3985	5.9	20,200	2960				

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

CHP16-953 — HEATING PERFORMANCE

at 3375 cfm (1595 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor Watts Input	Total Output	
°F	°C		Btuh	k/W
65	18	7460	117,000	34.3
60	16	7180	109,900	32.2
55	13	6900	102,700	30.0
50	10	6620	95,600	28.0
47	8	6450	91,300	26.7
45	7	6260	86,000	25.2
40	4	5785	72,900	21.3
35	2	5310	59,700	17.5
30	-1	5150	56,000	16.4
25	-4	4995	52,300	15.3
20	-7	4835	48,500	14.2
17	-8	4740	46,300	13.6
15	-9	4635	44,500	13.0
10	-12	4380	40,200	11.8
5	-15	4125	35,800	10.5
0	-18	3870	31,400	9.2
-5	-21	3610	27,000	7.9
-10	-23	3355	22,600	6.6
-15	-26	3100	18,300	5.4
-20	-29	2845	13,900	4.1

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

COOLING AND HEATING RATINGS

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

CHP16-1353 — COOLING CAPACITY — ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)			75°F (24°C)			85°F (29°C)			95°F (35°C)														
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb					
																							L/s	cfm	kW	Btuh
63°F (17.2°C)	1890	4000	21.1	72,200	3830	.73	.86	.98	20.4	69,600	4200	.74	.88	1.00	19.5	66,500	4580	.76	.91	1.00	18.6	63,600	4940	.78	.93	1.00
	2125	4500	21.8	74,200	3860	.76	.90	1.00	20.9	71,200	4230	.77	.92	1.00	20.0	68,100	4600	.79	.94	1.00	19.0	65,000	4980	.81	.98	1.00
	2360	5000	22.1	75,400	3880	.78	.93	1.00	21.2	72,400	4260	.79	.95	1.00	20.3	69,400	4630	.81	.97	1.00	19.6	66,800	5020	.84	.99	1.00
67°F (19.4°C)	1890	4000	22.4	76,500	3900	.58	.71	.83	21.6	73,700	4280	.59	.72	.85	20.7	70,700	4660	.59	.73	.87	19.8	67,700	5050	.60	.75	.89
	2125	4500	22.9	78,200	3930	.60	.73	.86	22.1	75,300	4310	.60	.74	.88	21.1	72,200	4700	.61	.76	.91	20.2	69,100	5080	.62	.78	.95
	2360	5000	23.3	79,600	3940	.61	.75	.89	22.4	76,400	4330	.62	.77	.91	21.5	73,300	4720	.63	.79	.94	20.6	70,200	5110	.64	.81	.98
71°F (21.7°C)	1890	4000	23.6	80,500	3960	.44	.56	.68	22.8	77,800	4350	.44	.57	.69	21.9	74,700	4760	.45	.58	.71	21.0	71,800	5160	.45	.59	.72
	2125	4500	24.2	82,500	3970	.45	.58	.70	23.3	79,500	4380	.45	.59	.72	22.3	76,200	4780	.45	.60	.73	21.5	73,300	5190	.46	.61	.75
	2360	5000	24.6	83,800	3990	.45	.59	.73	23.6	80,500	4390	.46	.60	.74	22.7	77,400	4810	.46	.61	.76	21.7	74,100	5220	.47	.63	.76

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

CHP16-1353 — TOTAL COOLING CAPACITY — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)			95°F (35°C)			105°F (41°C)			115°F (46°C)														
			Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb		Total Cooling Capacity		Compressor Motor Watts Input	Sensible To Total Ratio (S/T) Dry Bulb										
																		L/s	cfm	kW	Btuh	kW	Btuh	kW	Btuh	kW
63°F (17.2°C)	1890	4000	35.2	120,300	9130	.76	.91	1.00	33.8	115,500	9840	.78	.94	1.00	32.3	110,400	10,530	.80	.96	1.00	30.7	104,800	11,190	.83	.99	1.00
	2125	4500	36.0	122,900	9200	.79	.95	1.00	34.6	118,000	9920	.81	.97	1.00	33.0	112,700	10,640	.84	1.00	1.00	31.6	107,700	11,350	.86	1.00	1.00
	2360	5000	36.6	124,900	9260	.82	.98	1.00	35.3	120,400	10,010	.84	1.00	1.00	33.9	115,700	10,760	.87	1.00	1.00	32.5	110,900	11,500	.90	1.00	1.00
67°F (19.4°C)	1890	4000	37.4	127,800	9340	.60	.74	.88	35.8	122,200	10,080	.61	.76	.90	34.4	117,500	10,820	.62	.78	.93	32.7	111,600	11,520	.63	.80	.96
	2125	4500	38.1	130,200	9420	.61	.76	.91	36.7	125,400	10,160	.62	.78	.94	35.0	119,600	10,900	.64	.81	.97	33.3	113,700	11,620	.65	.84	.99
	2360	5000	38.9	132,700	9470	.63	.79	.95	37.2	126,900	10,230	.64	.81	.98	35.6	121,600	10,980	.66	.84	1.00	33.8	115,300	11,700	.68	.87	1.00
71°F (21.7°C)	1890	4000	39.6	135,300	9540	.44	.58	.74	38.0	129,700	10,330	.45	.59	.73	36.4	124,200	11,100	.45	.60	.75	34.8	118,800	11,860	.46	.62	.77
	2125	4500	40.4	137,900	9620	.45	.60	.74	38.8	132,500	10,410	.45	.61	.76	37.0	126,200	11,190	.46	.62	.78	35.4	120,900	11,950	.47	.64	.81
	2360	5000	41.0	140,100	9670	.46	.61	.77	39.3	134,300	10,480	.46	.63	.78	37.6	128,300	11,270	.47	.64	.81	35.9	122,500	12,030	.48	.66	.84

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

CHP16-1353 — TOTAL HEATING CAPACITY — BOTH COMPRESSORS OPERATING

Indoor Coil Air Volume 70°F db (21°C db)	Air Temperature Entering Outdoor Coil															
	65°F (18°C)			45°F (7°C)			25°F (-4°C)			5°F (-15°C)			-15°F (-28°C)			
	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	
L/s	cfm	k/W		Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh	k/W		Btuh
1890	4000	44.0	150,300	10,120	32.9	112,200	8825	21.5	73,400	7150	14.0	47,800	5855	6.8	23,100	4450
2125	4500	44.8	153,000	9920	33.7	114,900	8625	22.3	76,100	6950	14.8	50,500	5655	7.6	25,800	4250
2360	5000	45.6	155,600	9740	34.5	117,600	8445	23.1	78,700	6770	15.6	53,100	5475	8.3	28,400	4070

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

CHP16-1353 — HEATING PERFORMANCE at 4500 cfm (2125 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor Watts Input	Total Output	
°F	°C		Btuh	k/W
65	18	9920	153,000	44.8
60	16	9620	143,800	42.1
55	13	9325	134,700	39.5
50	10	9030	125,500	36.8
47	8	8850	120,000	35.2
45	7	8625	114,900	33.7
40	4	8070	102,200	29.9
35	2	7510	89,500	26.2
30	-1	7230	82,800	24.3
25	-4	6950	76,100	22.3
20	-7	6670	69,300	20.3
17	-8	6500	65,300	19.1
15	-9	6360	62,800	18.4
10	-12	6010	56,700	16.6
5	-15	5655	50,500	14.8
0	-18	5305	44,300	13.0
-5	-21	4955	38,100	11.2
-10	-23	4600	31,900	9.3
-15	-26	4250	25,800	7.6
-20	-29	3900	19,600	5.7

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

BLOWER DATA

CHP16-953 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT – Inches Water Gauge (Pa)																			
	.20 (50)		.40 (100)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.00 (250)		1.10 (275)		1.30 (325)		1.50 (375)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
2600 (1225)	750	1.04 (0.78)	840	1.19 (0.89)	905	1.28 (0.95)	940	1.35 (1.01)	980	1.40 (1.04)	1015	1.50 (1.12)	1050	1.63 (1.22)	1090	1.80 (1.34)	1155	2.05 (1.53)	1185	2.21 (1.65)
2800 (1320)	795	1.20 (0.90)	875	1.30 (.097)	940	1.43 (1.07)	975	1.49 (1.07)	1015	1.58 (1.18)	1045	1.70 (1.27)	1085	1.84 (1.37)	1120	2.00 (1.49)	1170	2.23 (1.66)	-----	-----
3000 (1415)	840	1.34 (1.00)	940	1.44 (1.07)	980	1.53 (1.14)	1015	1.68 (1.14)	1045	1.78 (1.33)	1085	1.94 (1.45)	1115	2.05 (1.53)	1145	2.21 (1.65)	-----	-----	-----	-----
3200 (1510)	875	1.49 (1.11)	940	1.60 (1.19)	1015	1.78 (1.33)	1045	1.88 (1.33)	1085	2.04 (1.52)	1115	2.15 (1.60)	1150	2.30 (1.72)	-----	-----	-----	-----	-----	-----
3400 (1605)	910	1.66 (1.24)	985	1.80 (1.34)	1050	2.03 (1.51)	1085	2.15 (1.51)	1120	2.30 (1.72)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3600 (1700)	955	1.75 (1.31)	1025	1.93 (1.44)	1090	2.32 (1.73)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3800 (1795)	1005	2.14 (1.60)	1065	2.35 (1.75)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

NOTE – All data is measured external to the unit with the air filters in place. See Page 14 for Accessory Air Resistance data.

CHP16-1353 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT – Inches Water Gauge (Pa)																			
	.20 (50)		.40 (100)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.00 (250)		1.10 (275)		1.30 (325)		1.50 (375)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
3600 (1700)	645	1.10 (0.82)	720	1.38 (1.03)	785	1.65 (1.23)	815	1.78 (1.33)	840	1.90 (1.42)	865	2.03 (1.51)	890	2.18 (1.63)	915	2.28 (1.70)	970	2.64 (1.97)	1025	3.00 (2.24)
3800 (1795)	670	1.25 (0.93)	740	1.53 (1.14)	805	1.78 (1.33)	830	1.90 (1.42)	860	2.03 (1.51)	885	2.18 (1.63)	910	2.28 (1.70)	935	2.45 (1.83)	985	2.80 (2.09)	1040	3.18 (2.37)
4000 (1890)	700	1.38 (1.03)	765	1.65 (1.23)	825	1.95 (1.45)	855	2.10 (1.57)	880	2.23 (1.66)	905	2.38 (1.78)	930	2.53 (1.89)	955	2.68 (2.00)	1010	3.05 (2.28)	1055	3.35 (2.50)
4200 (1980)	730	1.63 (1.22)	790	1.90 (1.42)	850	2.15 (1.60)	875	2.30 (1.72)	900	2.43 (1.81)	925	2.60 (1.94)	950	2.73 (2.04)	975	2.90 (2.16)	1025	3.25 (2.42)	-----	-----
4400 (2075)	755	1.80 (1.34)	815	2.08 (1.55)	870	2.38 (1.78)	895	2.50 (1.87)	920	2.65 (1.98)	950	2.83 (2.11)	970	2.95 (2.20)	1000	3.18 (2.37)	-----	-----	-----	-----
4600 (2170)	780	2.00 (1.49)	840	2.30 (1.72)	890	2.58 (1.92)	920	2.73 (2.04)	945	2.88 (2.15)	970	3.08 (3.08)	995	3.25 (2.42)	1020	3.40 (2.54)	-----	-----	-----	-----
4800 (2265)	815	2.28 (1.70)	865	2.53 (1.89)	920	2.85 (2.13)	945	3.00 (2.24)	970	3.15 (2.35)	995	3.38 (2.52)	-----	-----	-----	-----	-----	-----	-----	-----
5000 (2360)	840	2.53 (1.89)	885	2.75 (2.05)	945	3.10 (2.31)	970	3.30 (2.46)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
5200 (2445)	865	2.78 (2.07)	920	3.08 (2.30)	970	3.43 (2.56)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

NOTE – All data is measured external to the unit with the air filters in place. See Page 14 for Accessory Air Resistance data.

NOTE – Data in shaded area denotes optional 3 hp (2238W) drive kit.

ACCESSORY AIR RESISTANCE

Unit Model No.	Air Volume		Total Resistance – inches water gauge (Pa)					
			REMD16M Down-flo Economizer	EMDH16M Horizontal Economizer	RTD11 Step-Down Diffuser			FD11 Flush Diffuser
	cfm	L/s			2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
CHP16-953	2400	1185	.03 (7)	.03 (7)	.21 (52)	.18 (45)	.15 (37)	.14 (35)
	2600	1225	.04 (10)	.04 (10)	.24 (60)	.21 (52)	.18 (45)	.17 (42)
	2800	1320	.04 (10)	.04 (10)	.27 (67)	.24 (60)	.21 (52)	.20 (50)
	3000	1415	.05 (12)	.05 (12)	.32 (80)	.29 (72)	.25 (62)	.25 (62)
	3200	1510	.05 (12)	.05 (12)	.41 (102)	.37 (92)	.32 (80)	.31 (77)
	3400	1605	.06 (15)	.06 (15)	.50 (124)	.45 (112)	.39 (97)	.37 (92)
	3600	1700	.06 (15)	.06 (15)	.61 (152)	.54 (134)	.48 (119)	.44 (109)
	3800	1795	.07 (17)	.07 (7)	.73 (182)	.63 (157)	.57 (142)	.51 (127)
CHP16-1353	3600	1700	.03 (7)	.03 (7)	.36 (90)	.28 (70)	.23 (57)	.15 (37)
	3800	1795	.04 (10)	.04 (10)	.40 (99)	.32 (80)	.26 (65)	.18 (45)
	4000	1890	.04 (10)	.04 (10)	.44 (109)	.36 (90)	.29 (72)	.21 (52)
	4200	1980	.05 (12)	.05 (12)	.49 (122)	.40 (99)	.33 (82)	.24 (60)
	4400	2075	.05 (12)	.05 (12)	.54 (134)	.44 (109)	.37 (92)	.27 (67)
	4600	2170	.06 (15)	.06 (15)	.60 (149)	.49 (122)	.42 (104)	.31 (77)
	4800	2265	.07 (17)	.07 (17)	.65 (162)	.53 (132)	.46 (114)	.35 (87)
	5000	2360	.09 (22)	.09 (22)	.69 (172)	.58 (144)	.50 (124)	.39 (97)
	5200	2455	.10 (25)	.10 (25)	.75 (186)	.62 (154)	.54 (134)	.43 (107)

*Electric heaters for CHP16-953 and CHP16-1353 units have no appreciable air resistance.

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	feet	m	feet	m
CHP16-953	3000	1415	27 – 33	8 – 10	27 – 33	8 – 9
	3375	1595	30 – 37	9 – 11	30 – 37	9 – 10
	3750	1770	34 – 41	10 – 12	34 – 41	9 – 12
CHP16-1353	4400	2070	34 – 42	10 – 13	34 – 42	10 – 12
	4950	2335	38 – 47	12 – 14	38 – 47	11 – 14
	5500	2595	43 – 52	13 – 16	43 – 52	12 – 15

*Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. (15.2 m) per minute. Four sides open.

GUIDE SPECIFICATIONS

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

General — Furnish and install a single package air to air DX mechanical heat pump 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 and Canada.

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

Air Distribution — Equipment shall be capable of bottom (down-flo) or side (horizontal) handling of conditioned air. All air distribution ducts shall be fiberglass or ga. galvanized steel insulated with inch (mm) thick lb./ft³ (kg/m³) density fiberglass or equivalent.

Approvals — All electrical components shall have U.L. and C.S.A. Listing. All wiring shall be in compliance with NEC and CEC.

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

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

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

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested. Coil face area shall be not less than sq. ft. (m²) (indoor coil) and sq. ft. (m²) (outdoor coil).

Dual compressors shall be resiliently mounted, have overload protection, internal pressure relief, and crankcase heater. The refrigeration system shall have suction and discharge line service gauge ports, high pressure switch, loss of charge switch, defrost control, check and expansion valve, reversing valve, thermometer well, accumulator, drier and full refrigerant charge. Control option available shall consist of timed-off control and low ambient control. Shall be rated in accordance with ARI Standard 210/240-89.

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

Electric heaters shall be available factory or field installed. Heating elements shall be nichrome bare wire exposed directly to the air stream. Time delays shall bring the elements on and off in sequence with a time delay between each element. Limit controls shall provide overload and short circuit protection. Optional fuse blocks shall be required on electric heaters.

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. Indoor coil condensate drain extended outside cabinet shall be provided. Lifting brackets shall be provided for rigging.

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

Supply Air Blowers — Centrifugal supply air blower shall have permanently lubricated ball bearings and adjustable belt drive. Motor mount base shall permit ease of motor changeover and belt tension adjustment. Blower wheel shall be statically and dynamically balanced. Blower shall be capable of delivering cfm (L/s) at an external static pressure of inches water gauge (Pa) requiring bhp (W) and rpm.

Outdoor Coil Fan(s) — Direct drive propeller type condenser fan(s) shall discharge vertically and be direct driven by a hp (W) motor. Fan motor shall be totally enclosed, permanently lubricated and inherently protected. Fan(s) shall have a safety guard.

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

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 shall be approved by National Roofing Contractors Association.

Economizer Damper Section — Furnish and install complete with re-circulated air dampers, outside air dampers, air filters, damper actuator and controls. Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of 100% outdoor air for minimum ventilation and free cooling. Integrated economizer cycle shall allow compressors to cycle for dehumidification and additional cooling, as needed, with 100% outdoor air intake. Damper actuator shall be 24 volt, fully modulating spring return. Controls shall include fixed 55° F (13° C) mixed air controller, damper actuator, adjustable outdoor air minimum position switch and solid-state adjustable outdoor air enthalpy control. Cabinet shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Control option shall consist of differential enthalpy control (return air sensor).

Gravity Exhaust Dampers — Optional pressure operated dampers shall be available for field installation in economizer damper section. Neoprene coated fiberglass dampers shall prevent blow-back and outdoor air infiltration during off cycle. Shall be equipped with rain-hoods and bird screen.

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

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

Bottom Power Entry Kit — Optional kit shall provide bottom power entry to the unit within the confines of 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. (m) 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.

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.

UNIT DIMENSIONS – inches (mm)

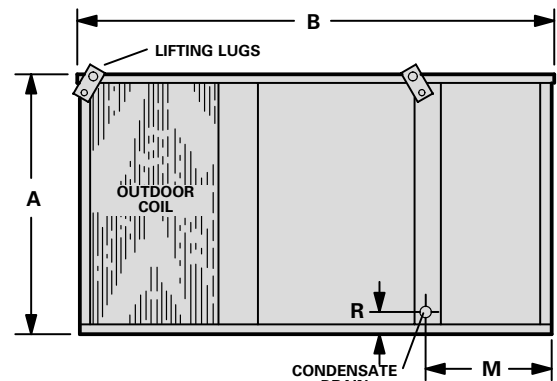
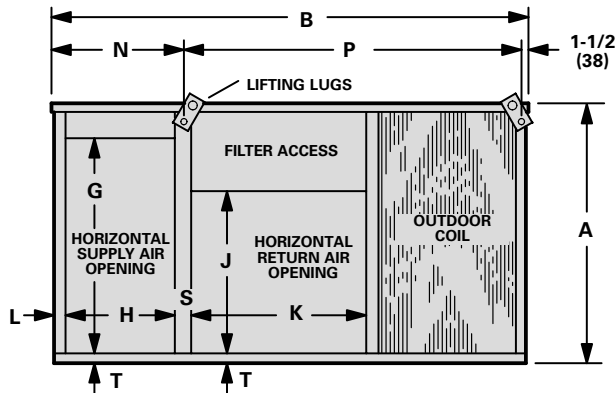
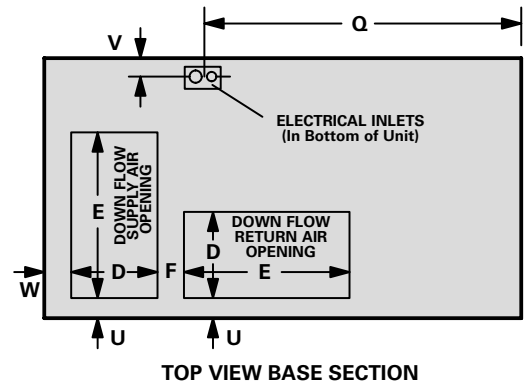
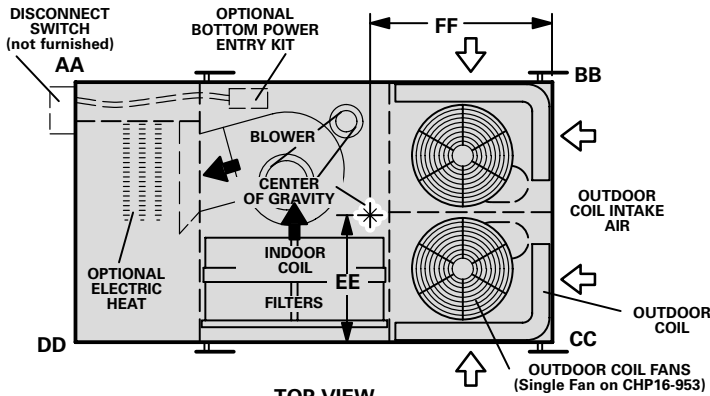
CHP16 BASIC UNIT

CORNER WEIGHTS

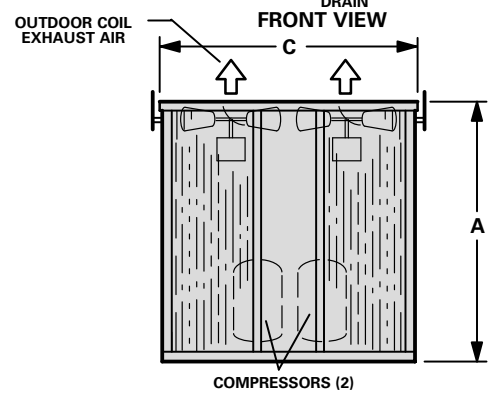
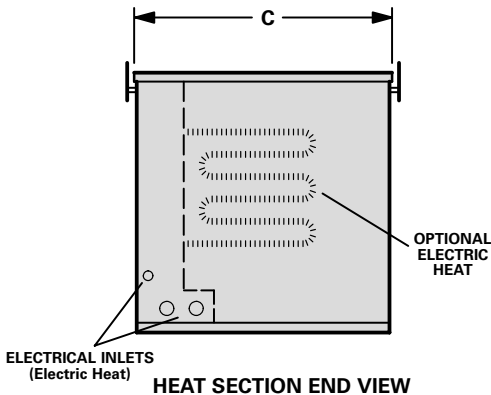
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHP16-953	198	90	317	144	208	94	128	58
CHP16-1353	215	98	383	174	330	150	185	84

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
CHP16-953	29	737	34	921
CHP16-1353	32-1/4	806	33-3/4	902



WITH HORIZONTAL SUPPLY & RETURN AIR OPENING



Model Number	A		B		C		D		E		F		G		H		J		K		L	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHP16-953	39	991	88-1/2	2248	48	1219	16-1/2	419	30-3/8	772	5-5/8	143	32-1/8	816	19-7/16	494	24-5/8	625	33	838	1-5/8	41
CHP16-1353	46	1168	94	2388	60	1524	24	610	30-3/8	772	4-7/16	113	39-1/8	994	25-1/4	641	31-5/8	803	33	838	2	51

Model Number	M		N		P		Q		R		S		T		U		V		W	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHP16-953	25-1/16	637	22-1/8	562	64-7/8	1648	54-1/2	1384	2-3/8	60	2-3/4	70	1-1/2	38	3-1/16	78	4-3/16	106	3-1/16	78
CHP16-1353	31-3/16	792	28-1/2	724	64	1626	54-1/2	1384	2-3/8	60	2-3/4	70	1-1/2	38	3-1/16	78	4-3/16	106	3-1/16	78

ACCESSORY DIMENSIONS – inches (mm)

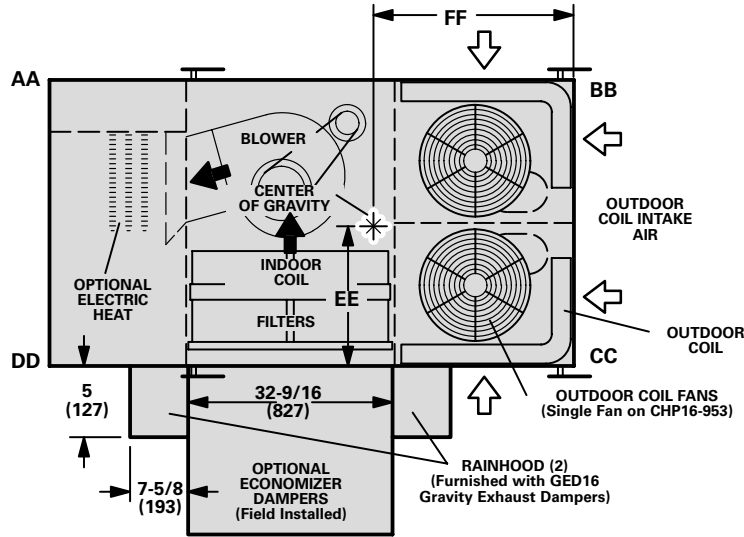
CHP16-953 AND -1353 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION AND RMF16 ROOF MOUNTING FRAME

CORNER WEIGHTS

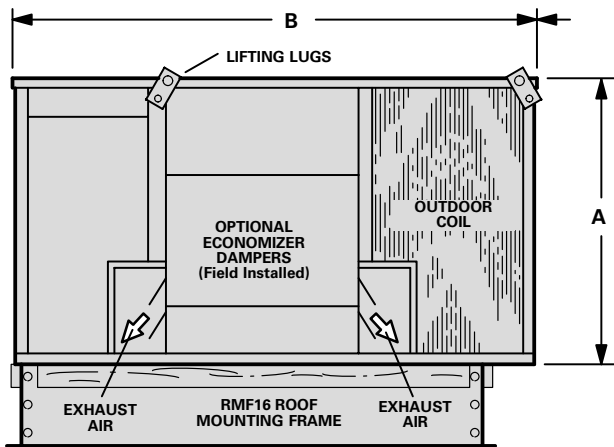
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHP16-953	200	91	298	135	266	121	178	81
CHP16-1353	213	97	367	166	406	184	236	107

CENTER OF GRAVITY

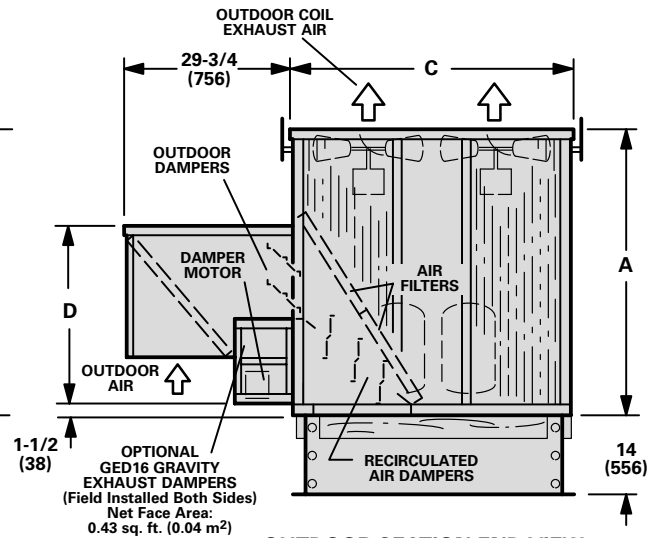
Model Number	EE		FF	
	inch	mm	inch	mm
CHP16-953	25-3/8	645	35-1/2	902
CHP16-1353	24-1/2	622	38	965



TOP VIEW



BACK VIEW



OUTDOOR SECTION END VIEW

Model Number	A		B		C		D	
	inch	mm	inch	mm	inch	mm	inch	mm
CHP16-953	39	991	88-1/2	2248	48	1219	28-9/16	725
CHP16-1353	46	1168	94	2388	60	1524	34-9/16	878

ACCESSORY DIMENSIONS – inches (mm)

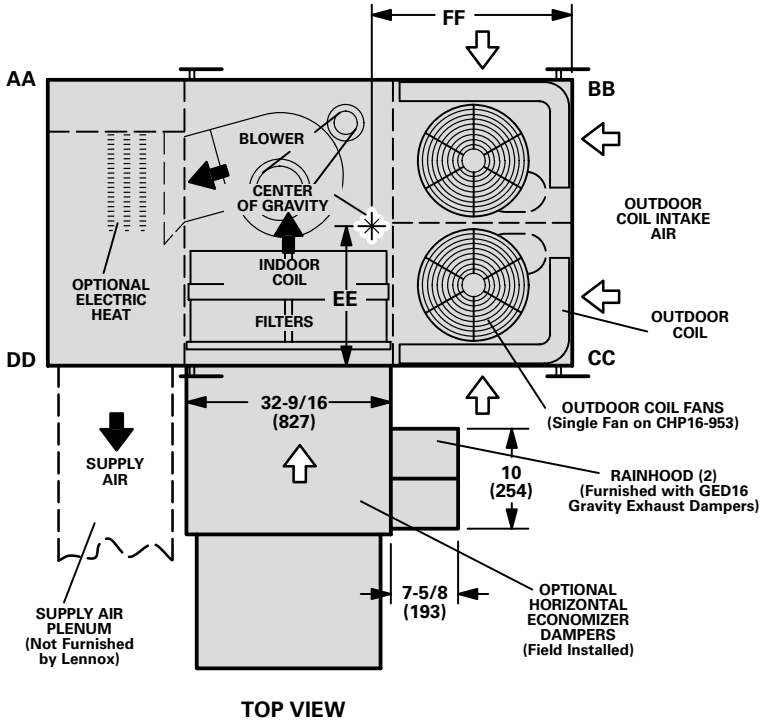
CHP16-953 AND -1353 UNITS WITH EMDH16 HORIZONTAL ECONOMIZER DAMPER SECTION

CORNER WEIGHTS

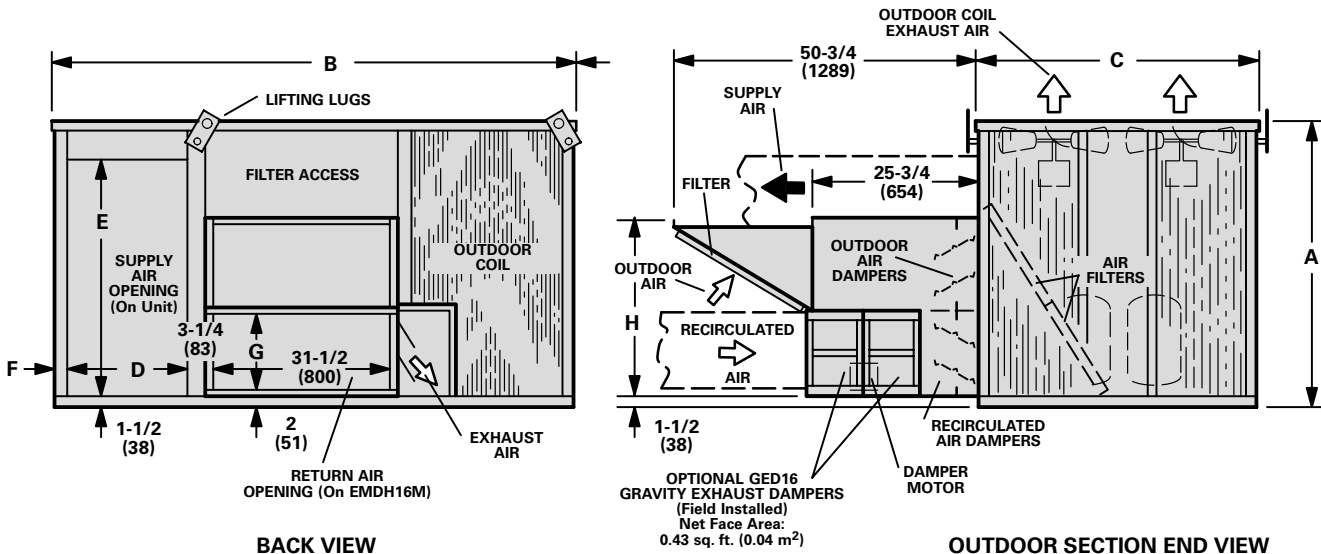
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
CHP16-953	200	91	298	135	266	121	178	121
CHP16-1353	213	97	367	166	406	184	236	107

CENTER OF GRAVITY

Model Number	EE		FF	
	inch	mm	inch	mm
CHP16-953	25-3/8	645	35-1/2	902
CHP16-1353	24-1/2	622	38	965



TOP VIEW



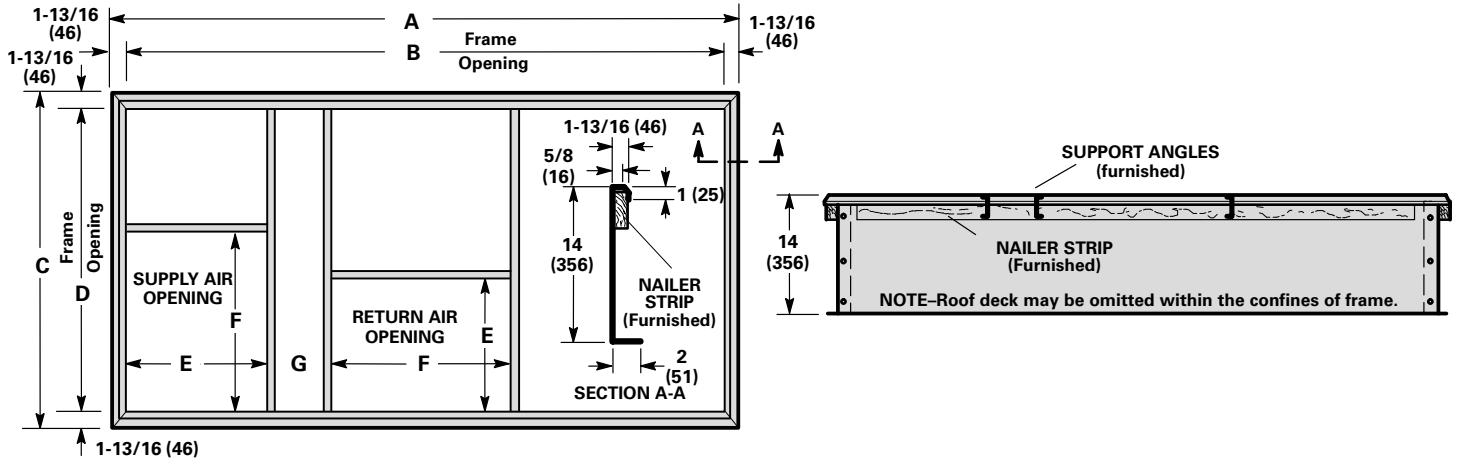
BACK VIEW

OUTDOOR SECTION END VIEW

Model Number	A		B		C		D		E		F		G		H	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
CHP16-953	39	991	88-1/2	2248	48	1219	19-7/16	494	32-1/8	816	1-5/8	41	13-1/4	337	28-3/4	730
CHP16-1353	46	1168	94	2388	60	1524	25-1/4	641	39-1/8	994	2	51	19-1/4	489	34-3/4	883

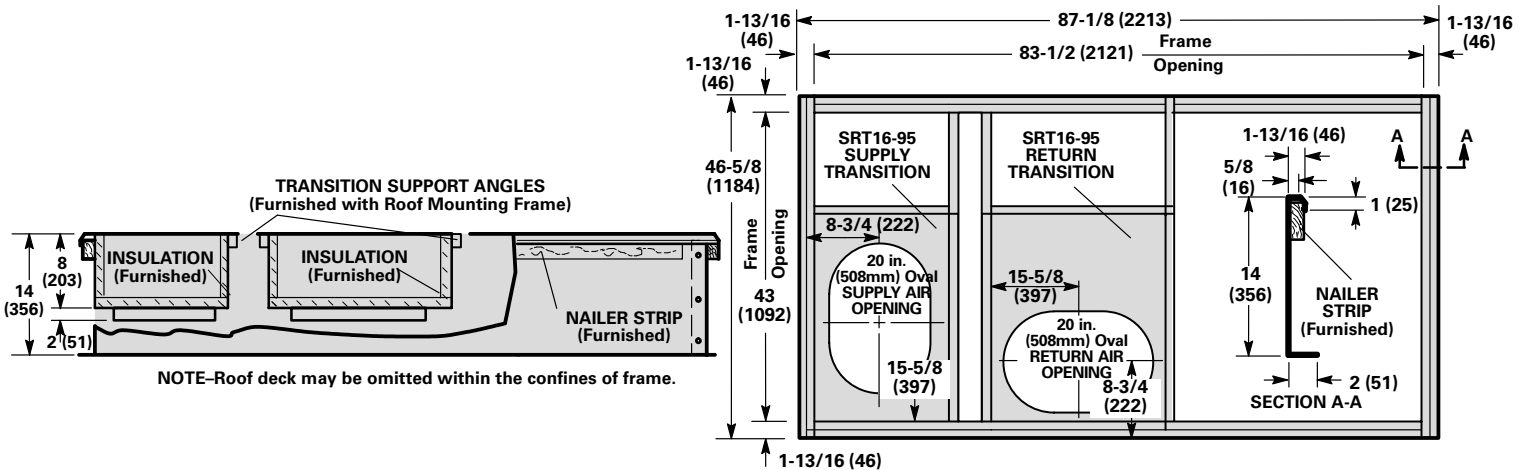
ACCESSORY DIMENSIONS – inches (mm) U.S. Only

RMF16 SERIES ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING

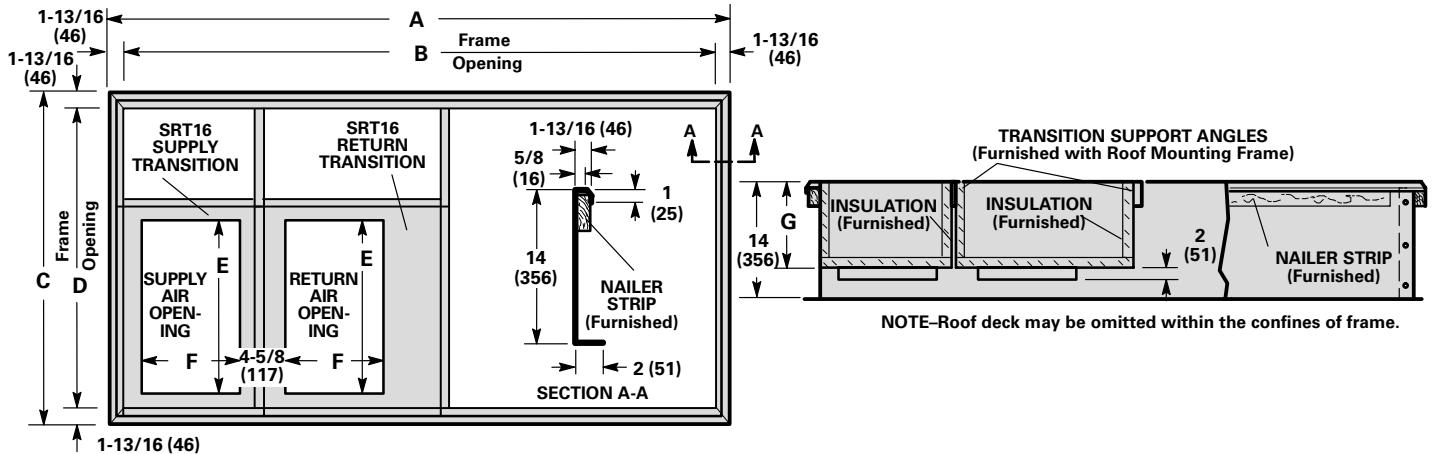


Model Number	A		B		C		D		E		F		G	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-95	87-1/8	2213	83-1/2	2121	46-5/8	1184	43	1092	17-15/16	456	31-1/2	800	4	102
RMF16-135/160	92-1/2	2350	88-7/8	2257	58-1/2	1486	54-7/8	1394	25-1/4	641	31-1/2	800	3-3/16	81

**RMF16-95 ROOF MOUNTING FRAMES WITH SRT16
SUPPLY AND RETURN AIR TRANSITIONS FOR FD11-95 AND RTD11-95 CEILING DIFFUSERS**

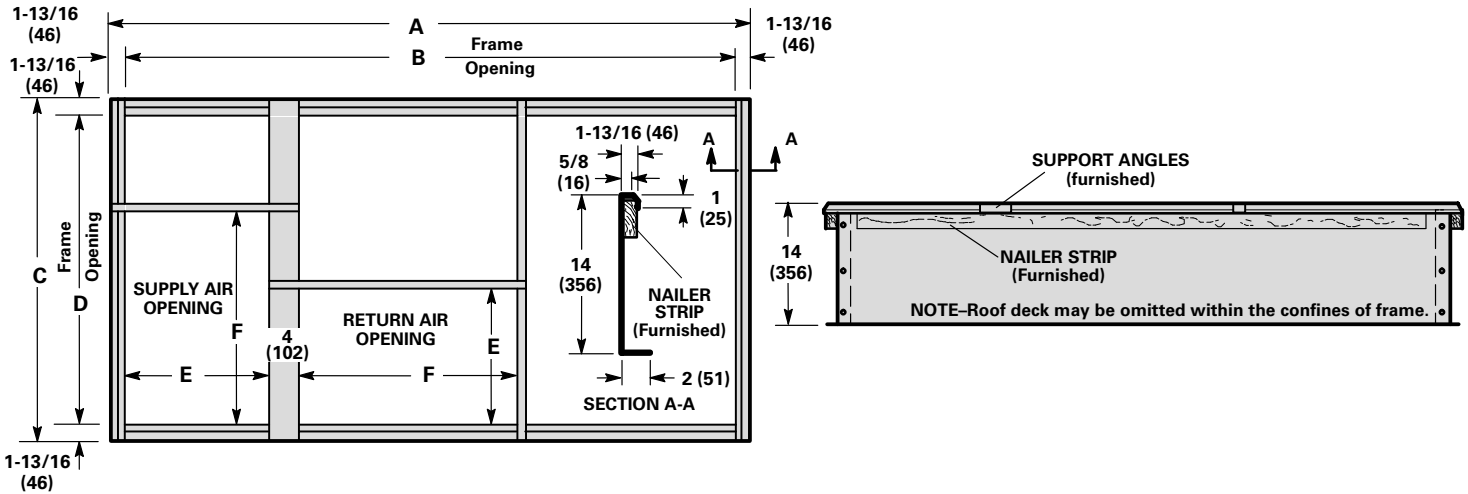


**RMF16-135/160 ROOF MOUNTING FRAMES WITH SRT16
SUPPLY AND RETURN AIR TRANSITIONS FOR FD11 AND RTD11 CEILING DIFFUSERS**



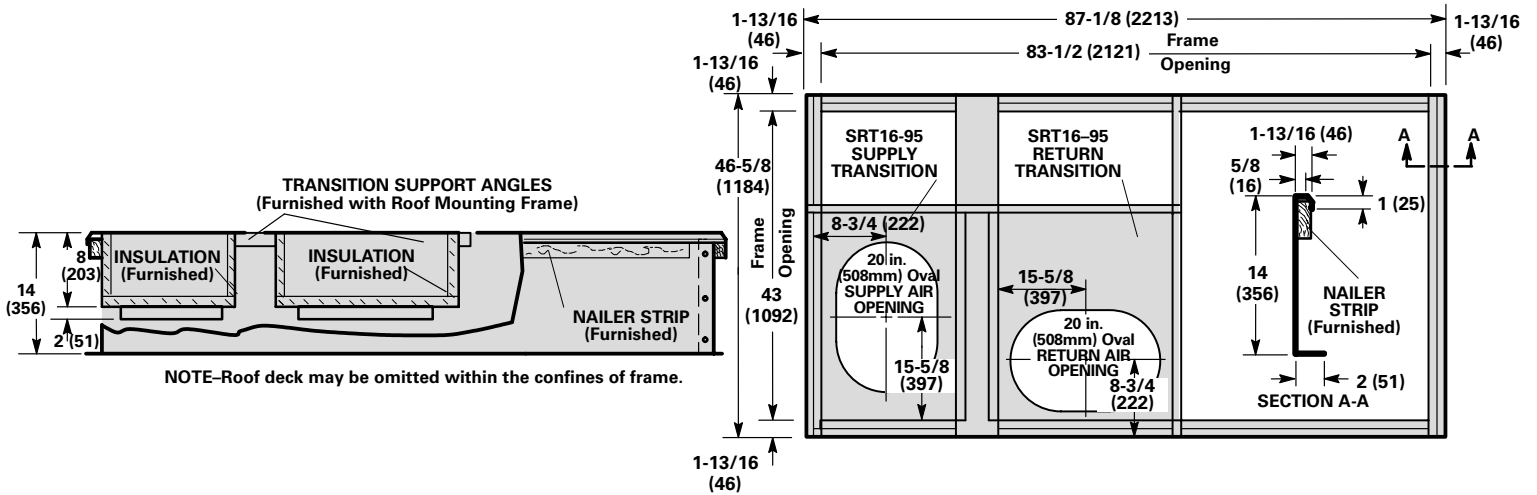
Model Number	A		B		C		D		E		F		G	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
RMF16-135/160	92-1/2	2346	88-7/8	2257	58-1/2	1486	54-7/8	1394	28	711	18	457	8	203

RMF16-95 and -135/160 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING

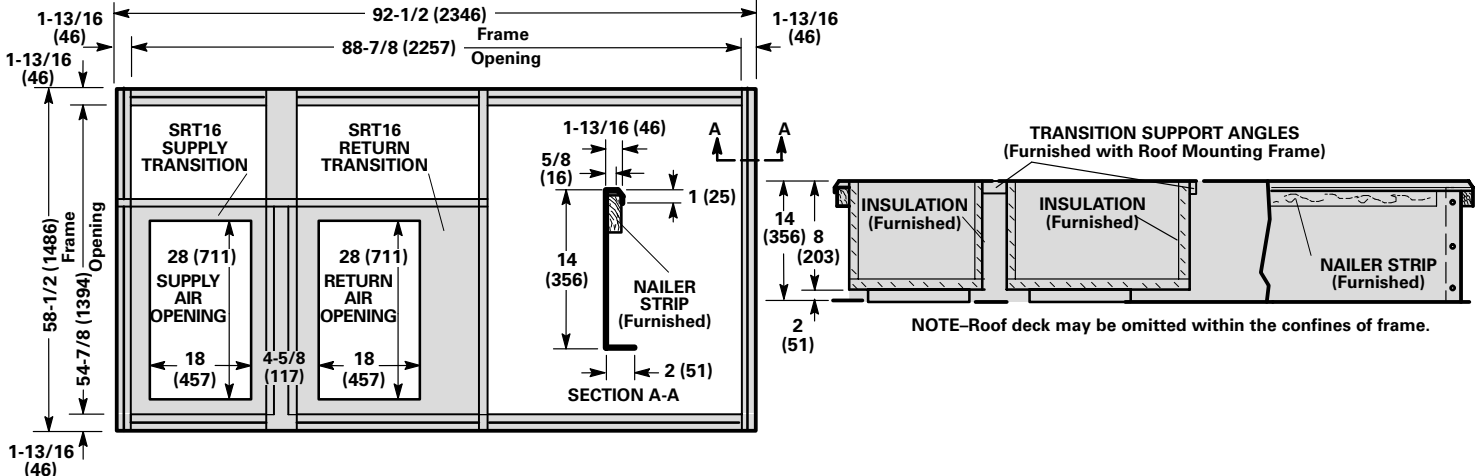


Model No.	A		B		C		D		E		F	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RMF16-95	87-1/8	2213	83-1/2	2121	46-5/8	1184	43	1092	17-15/16	456	31-1/2	800
RMF16-135/160	92-1/2	2350	88-7/8	2257	58-1/2	1486	54-7/8	1394	25-1/4	641	31-1/2	800

RMF16-95 ROOF MOUNTING FRAMES WITH SRT16 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11-95 & RTD11-95 CEILING DIFFUSERS

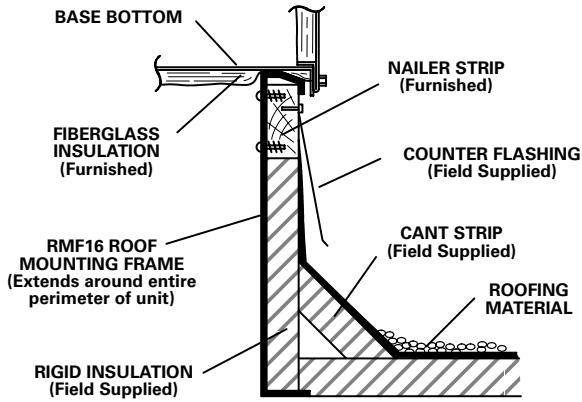


RMF16-135/160 ROOF MOUNTING FRAMES WITH SRT16 SUPPLY AND RETURN AIR TRANSITIONS FOR FD11 & RTD11 CEILING DIFFUSERS



ACCESSORY DIMENSIONS – inches (mm)

TYPICAL FLASHING DETAIL FOR RMF16 ROOF MOUNTING FRAME



ROOF MOUNTING FRAME SPECIFICATIONS

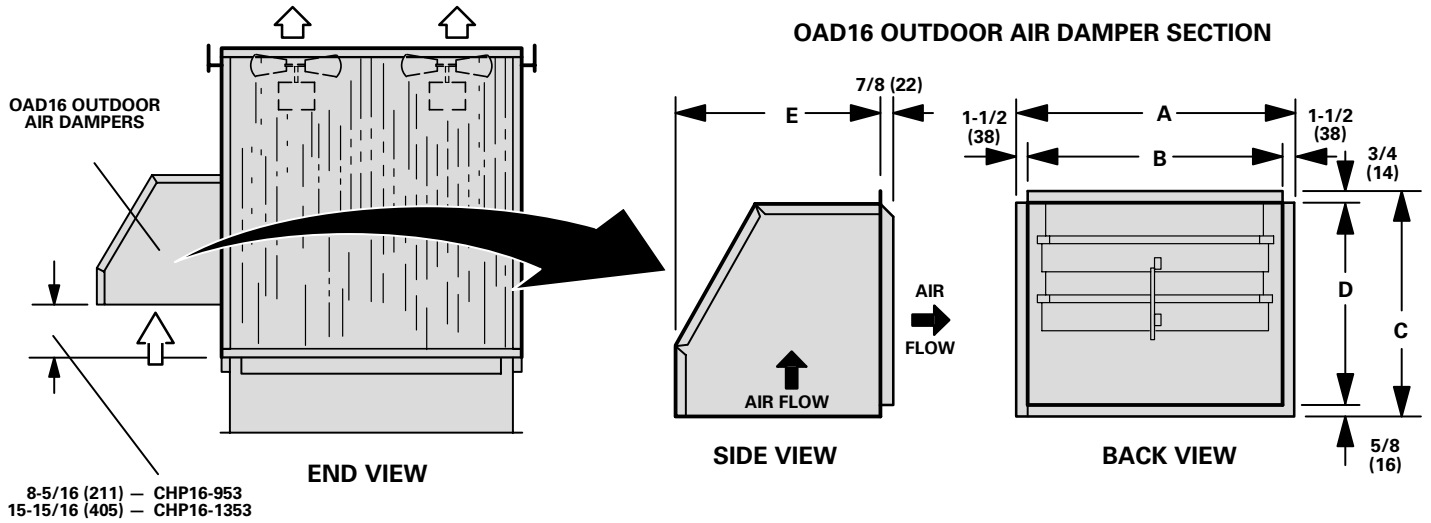
Roof Mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Mounting Frame	RMF16
*Moment of inertia (I) (inch ⁴) (mm ⁴)	42 (1.75 x 10 ⁷)
*Section modulus $\frac{I}{C}$ (inch ³) (mm ³)	5.8 (9.5 x 10 ³)
Weight (lb./ft.) (kg/m) of length	5.5 (8.2)
Design strength (psi) (mPa)	20 000 (138)

*Includes both sides of frame.

CHP16 UNIT WITH OAD16 OUTDOOR AIR DAMPER SECTION DOWN-FLO SUPPLY AND RETURN AIR

NOTE – For Horizontal (Side) Supply And Return Air, OAD16 Field Installs on Return Air Duct

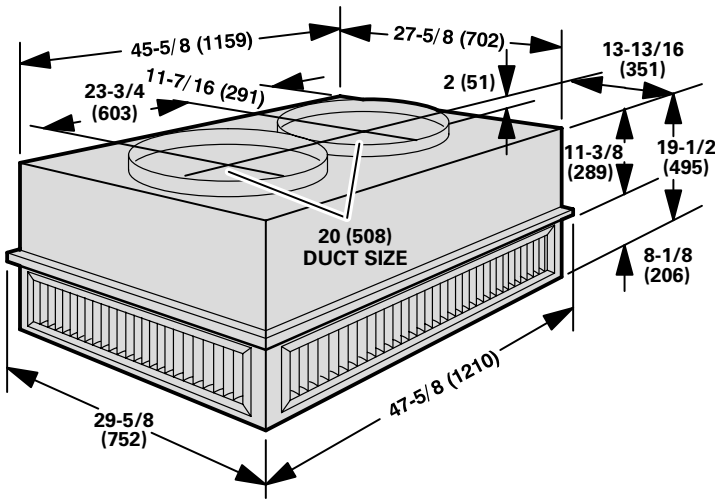


Model Number	A		B		C		D		E	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
OAD16-95 OAD16-135	24	610	21	533	18-1/2	470	17-1/8	435	17-1/8	435

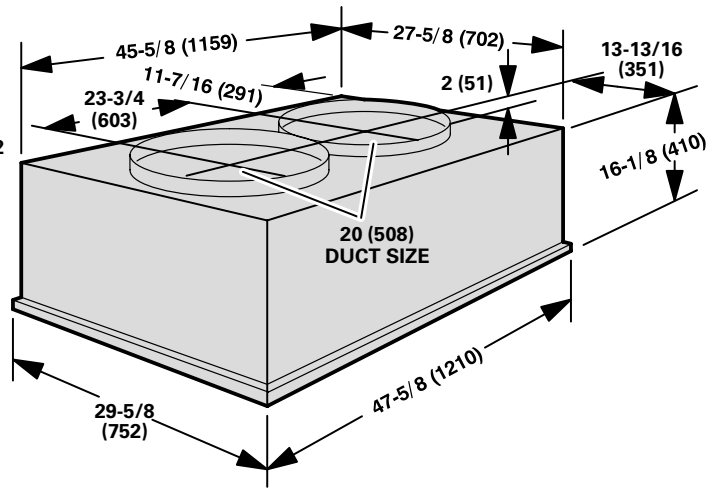
ACCESSORY DIMENSIONS – inches (mm)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

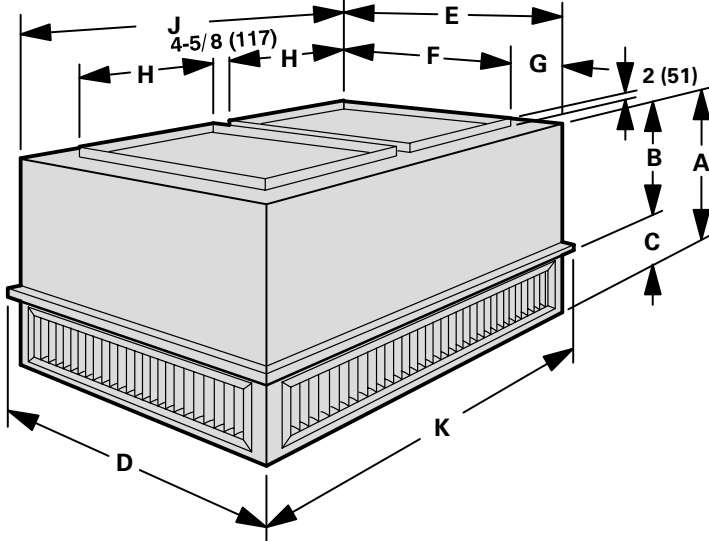
RTD11-95 STEP-DOWN CEILING DIFFUSER



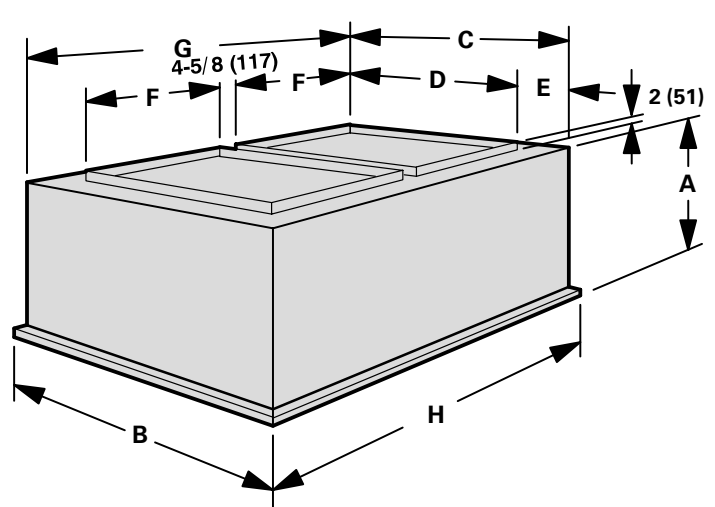
FD11-95 FLUSH CEILING DIFFUSER



RTD11-135 STEP-DOWN CEILING DIFFUSER



FD11-135 FLUSH CEILING DIFFUSER



Model Number	A		B		C		D		E	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-135	28	711	18-7/8	479	9-1/8	232	35-5/8	905	33-5/8	854

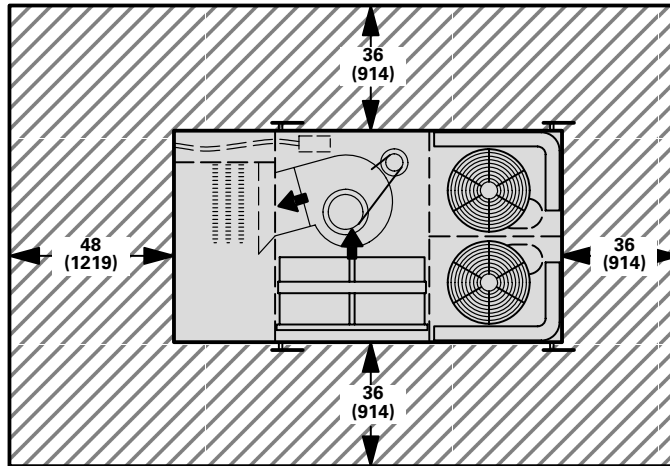
Model Number	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-135	24-1/8	613	35-5/8	905	33-5/8	854	28	711

Model Number	F		G		H		J		K	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-135	28	711	2-13/16	71	18	457	45-5/8	1159	47-5/8	1210

Model Number	E		F		G		H	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-135	2-13/16	71	18	457	45-5/8	1159	47-5/8	1210

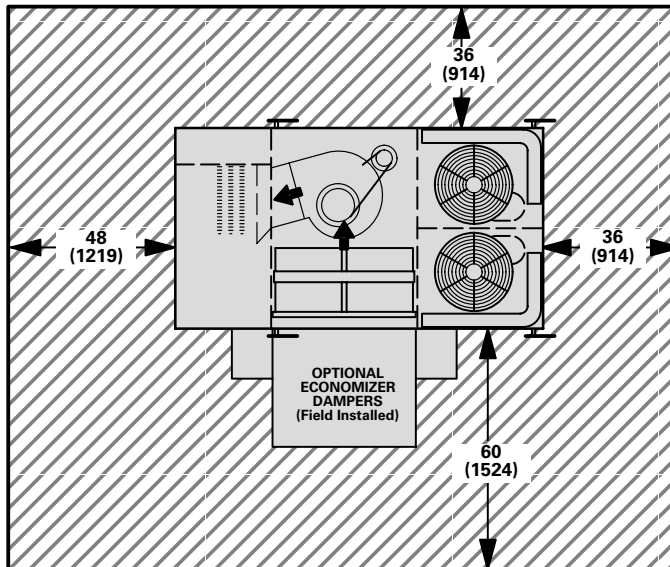
INSTALLATION CLEARANCES – inches (mm)

CHP16 BASIC UNIT



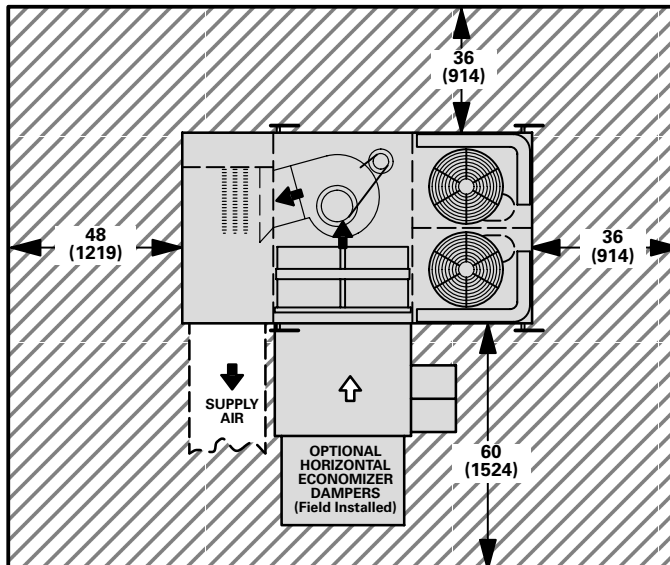
NOTE – Top Clearance Unobstructed.
NOTE – Entire perimeter of unit requires support when elevated above mounting surface.

CHP16 UNIT WITH REMD16M ECONOMIZER DAMPER SECTION



NOTE – Top Clearance Unobstructed.

CHP16 UNIT WITH EMDH16M HORIZONTAL ECONOMIZER DAMPER SECTION



NOTE – Top Clearance Unobstructed.