

LENNOX®

CHA11-953-1353-1853 & 2753 SINGLE PACKAGE AIR CONDITIONERS

*91,000 to 240,000 Btuh (26.7 to 70.3 kW) Cooling Capacity
35,500 to 307,000 Btuh (10.4 to 90.0 kW) Optional Electric Heat
100,000 to 600,000 Btuh (29.3 to 175.8 kW) Optional Hot Water Heat

*At ARI Standard Test Conditions



High Efficiency Rooftop Units Feature Energy Saving Operation, Low Operating Cost and Application Flexibility

Lennox single package CHA11 air conditioner units are designed for rooftop installation with bottom or end handling of supply and return air. A separate roof mounting frame (optional) mates to the bottom of the unit and when flashed into the roof permits weatherproof duct connection and entry into the structure. No additional roof curbing or flashing is required. The roof mounting frame is shipped knocked down and must be field assembled. Units are available for cooling only, cooling with electric heat or cooling with hot water heat. Voltage options provide a choice for power supply requirements.

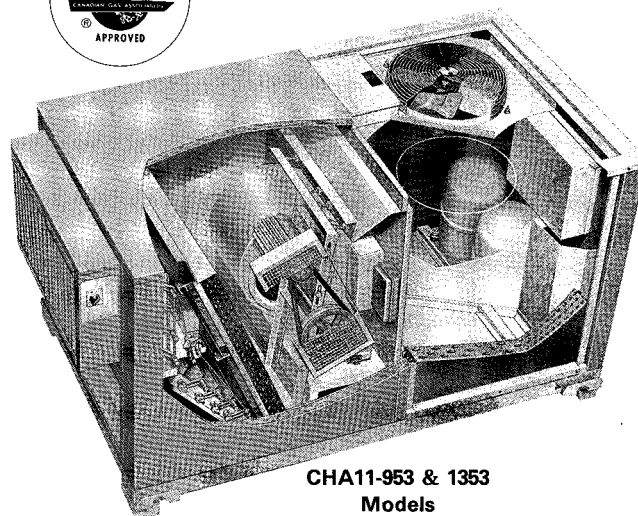
Energy and operational cost saving features include: Demand oriented solid-state electronic control system. Dual refrigerant circuits to control system capacity and reduce energy usage. POWER SAVER® option will provide "free cooling" by using outdoor air in lieu of mechanical refrigeration. POWER SAVER enthalpy control provides maximum use of the outdoor air for "free" cooling. Staging of electric heaters and modulating control of the hot water heat minimizes energy usage for the heating options.

The insulated single cabinet houses highly efficient air cooled DX cooling, powerful belt drive blower, air filters and optional POWER SAVER dampers or minimum fresh air dampers and exhaust dampers. Energy conserving POWER SAVER dampers are available factory or field installed. Exhaust dampers and minimum fresh air dampers (manual or automatic) require field installation.

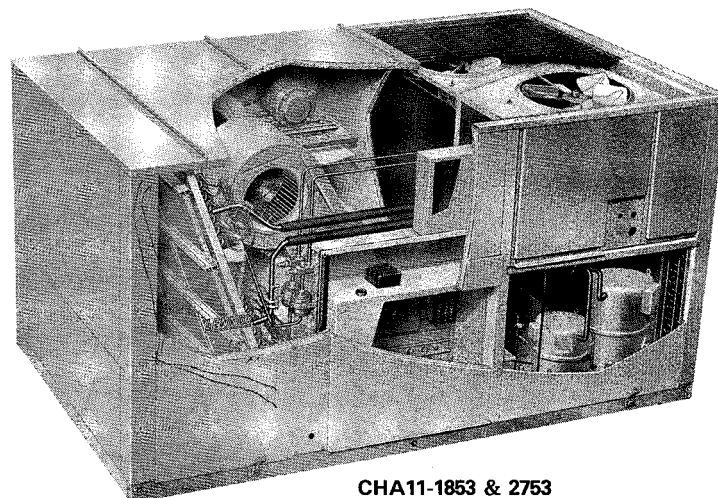
The complete factory sealed DX cooling consists of two independent refrigeration systems including separate Lennox compressors and their independent condenser coil and fan with a separate circuit in the single evaporator coil. Lennox augments its reliable operating components with a full complement of standard comfort and safety controls. Thermostat is not furnished and must be ordered extra. Separate supply and return air double duct, combination ceiling supply and return air duct, or horizontal (end) duct systems are applicable to the units. A choice of RTD stepdown or FD flush model diffusers are available for ceiling supply and return air distribution systems.

CHA11-953 and CHA11-1353 units have been tested in the Lennox Laboratory environmental test room according to ARI Standard 210 test conditions. Additionally, units have been tested in the Lennox sound test room according to ARI Standard 270. Units coming within the scope of this standard (135,000 Btuh (39.5 kW) or less) are certified under the ARI certification program. CHA11-1853 and CHA11-2753 models have been tested and rated according to ARI Standard 360 test conditions. Blower data is from unit tests in the Lennox air test chamber. Units are C.G.A. certified and components within are bonded for grounding to meet safety standards for servicing required by CEC.

Units are shipped completely factory assembled, piped, and wired. In addition, each unit is test operated at the factory insuring unit dependability.

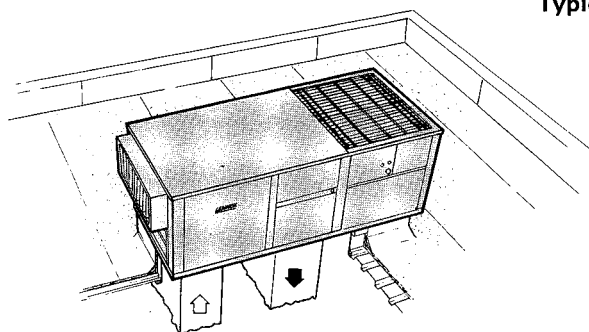


CHA11-953 & 1353
Models

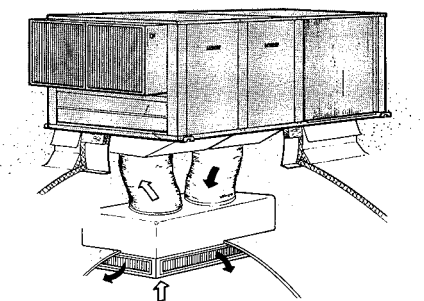


CHA11-1853 & 2753
Models

Typical Applications



Rooftop Installation with
Double Duct Air Distribution System



Rooftop Installation with
Combination Ceiling Supply and Return Air System

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

FEATURES

Lennox Solid-State Control System — Energy saving electronic control system measures the deviation between room temperature and set point and then controls the supply air temperature to meet the load requirements. The control system consists of a dual set point room thermostat located in the conditioned space or a dual set point transmitter with a remote temperature sensor in the conditioned space, a discharge temperature sensor located in the supply air duct of the unit, Logic Panel installed in the unit and a modulating damper actuator for the POWER SAVER dampers. This solid-state control system will operate the unit to automatically match its output to the load with minimum space temperature variation. To accomplish this the room thermostat or transmitter, in the conditioned space, is continuously comparing space temperature deviation with supply air temperature and sending a varying load signal to the logic panel. The heat-cool relays in the logic panel respond to the signal and cycle the stages of heating or cooling and POWER SAVER position to match the output to the load condition. To maintain stable space temperatures the Logic Panel balances the space thermostat demand signal against the system output. System output is measured by the discharge temperature sensor in the supply air duct. The combined demand and output signals determine POWER SAVER position and number of heating or cooling stages energized. The discharge sensor also provides a positive modulating low limit signal to the Logic Panel ensuring that the POWER SAVER will modulate closed if the discharge air gets too cold. Additionally on power failure, system recycles all stages to off. When power is restored system sequences stages back on with a time delay between stages.

Durable Cabinet — Rugged leaktight cabinet is constructed of heavy gauge galvanized steel. Cabinet is subject to a five station zinc phosphate metal wash process resulting in a perfect bonding surface for a paint finish of baked-on outdoor enamel. Long lasting enamel finish provides maximum protection from the weather. Large removable panels allow complete service access. Electrical inlets are provided in the cabinet for wiring entry. Wiring junction box and control boxes with all controls factory installed are conveniently located for service access. Lifting brackets are furnished on each corner of the base for ease of handling and rigging. Drainage holes in base rails provide moisture removal.

Cabinet Insulation — Base section and cabinet panels exposed to conditioned air are lined with thick fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass. The cabinet panels have 3 in. (76mm) thick 1/2 lb./ft. (8 kg/m³) density fiberglass insulation and the base 1/2 in. (13mm) thick 6 lb./ft. (96 kg/m³) density. Insulation is sandwiched between the cabinet panel and a galvanized steel inner panel liner protecting the insulation indefinitely. It will never erode or tear away from a panel to clog or impair unit operation.

Refrigeration System — Factory sealed refrigerant system consists of compressors, condenser coils and direct drive fans, evaporator (dual circuits) coil and blower, expansion valves, high capacity driers, high and low pressure switches, refrigerant lines connected and a full operating charge of refrigerant. Dual independent refrigerant circuits provide staging control to fit varying cooling loads.

Lennox 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. Lennox fabricated 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. 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 evaporator coil is face split with two separate circuits. Each circuit has its separate expansion valve, condensing coil, fan, compressor and refrigerant charge.

Drain Pan — Deep, corrosion resistant evaporator coil drain pan is constructed of heavy gauge galvanized steel. Drain pipes extend outside of cabinet on both sides for convenient and easy connections.

Dependable Lennox Compressors — Lennox compressors give staging control to fit varying cooling load requirements. CHA11-953 and CHA11-1353 models are equipped with two Lennox series "A" single speed compressors. CHA11-1853 model single speed compressors consist of a series "A" and series "D" 10 ton (35 kW). The CHA11-2753 has two single speed series "D" compressors. Reliable Lennox compressor is hermetically sealed with built-in protection from excessive current and temperatures. Suction cooled and overload protected. Large housing, spring loaded discharge valve, high intake ports and crankcase heater result in effective slugging protection. In addition, the large volume housing provides abundant oil reserve. Oil pump is designed to assure complete lubrication. Special blended oil (natural and synthetic) withstands high temperatures without breakdown. Vertical crankshaft is statically and dynamically computer balanced. Low clearance volume piston and cylinder yields increased volumetric efficiency. Strategically located high efficiency discharge muffler reduces pulsation in discharge line and allows quiet operation. Immersible PTC thermistor type crankcase heater is temperature actuated to operate only when required and ensures proper lubrication at all times. Motor is located within refrigerant flow pattern resulting in low motor winding temperatures. Twin solid-state temperature sensors imbedded in motor windings provides protection from excessive temperatures. Conveniently located control box allows one spot servicing. Entire running gear assembly is spring mounted within the sealed housing. In addition, the compressor is installed in the unit on resilient rubber mounts.

Efficient Condenser Fans — Two direct drive fans draw large air volumes uniformly through dual condenser coils 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 flow through the coils result in high refrigerant cooling capacity. Sleeve bearing fan motor is permanently lubricated and overload protected. A rain shield on the motor provides additional protection from moisture. Corrosion resistant PVC coated steel wire fan guards are furnished.

Powerful Supply Air Blower — Belt drive centrifugal blower delivers large air volume efficiently and with minimum power consumption. Blower assembly is mounted to rugged angle iron frame with the entire blower and frame assembly vibration isolated on rubber mounts. Ball bearings are permanently sealed and lubricated. Blower wheel is statically and dynamically balanced. Design of motor mounting base permits quick and simple motor changeover, belt tension adjustment or belt changing. A choice of motor outputs and drives is available. Adjustable motor pulley allows for variable speed adjustments. Motor is overload protected. Drives are covered with a protective guard.

Air Filters — One inch (25mm) thick frame type throwaway filters are furnished as standard. Fiberglass media is oil impregnated for increased efficiency. Filters are easily accessible for quick and simple replacement.

Optional Electric Heat — Available for factory installation in 15 kW through 90 kW 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 excessive overheating. Heaters may be two stage controlled with each stage being energized only when required.

Optional Hot Water Heat — A factory installed hot water coil is equipped with a three-way modulating valve. Factory installed freeze-stat activates valve to circulate water during freezing conditions. A glycol solution may also be used in the system to provide freeze protection. Lennox designed and built coil has large face area, excellent heat transfer and low air resistance. Constructed of precisely spaced ripple-edged aluminum fins fitted to durable copper tubes. Durable copper tubing assures long service life and easy servicing. Each joint is silver soldered and coil is factory tested under pressure to insure leakproof construction.

FEATURES

Optional Blower Powered Mixing Damper Boxes — ZDB1 series mixing air boxes with a range of 270 to 1900 cfm (125 to 895 L/s) are available for zone control system applications. Units install in the duct system within the structure. For data see Accessories section, Page 7.

Thermostat Choice — Dual set point room Thermostat (25C52) or Transmitter (25C51) with a choice of remote sensors is available. Both have separate heating-cooling locking set points concealed under the cover and do not have indicating thermometer. The room thermostat has an integral sensor and installs in the conditioned space. For remote temperature control, the transmitter installs outside the conditioned space with a Remote Sensor (58C92) in the conditioned area or a Return Air Sensor (27C40) in the return air duct of the unit. Sensor must be ordered extra. If desired in multiple unit applications, that serve a common space, up to six units can be controlled from a single thermostat. Thermostat and transmitter are furnished with a wiring wallplate and may be installed horizontally or vertically. In addition, an optional Switching Subbase (58C93) is available and must be ordered extra. It is equipped with system selector switch (HEAT — AUTO — COOL — OFF) and fan switch (AUTO — ON). Fan switch provides a choice of intermittent (AUTO) or continuous (ON) blower operation. A Voltage Control Relay (51C21) is required with the switching subbase and must be ordered extra. Relay provides blower operation for Power Saver. Both the thermostat and transmitter will mount on a standard electrical outlet box.

Optional SP11 Remote Status Panel — 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 Power Saver operation or DX cooling operation for units without Power Saver. 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. Additional controls are required for use with the Status Panel and must be specified when ordering. Filter Switch Kit (97C85) is used in conjunction with the Filter light. CHA11-953-1353 units with electric heat require a Current Sensing Relay (59C94) and with hot water heat a Proving Relay (51C22) for operation of No Heat light. CHA11-1853-2753 models with electric heat or hot water heat require a Proving Relay (14F57) for operation of the No Heat light.

Optional SSP11 Remote Switching Status Panel — The operation of the unit can be controlled and observed on the Switching Status Panel (12F84) conveniently located within the conditioned area. Signal lights on the panel indicate "Cool Mode", "Heat Mode", "Compressor 1", "Compressor 2", "No Heat" and "Filter". The Cool Mode signal light is green when lit and indicates Power Saver operation or DX cooling operation for units without Power Saver. Heat Mode light is green, reflects heating operation and will turn red when switched to emergency heat mode. 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. 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 time period. Additional controls are required for use with the Status Panel and must be specified when ordering. Voltage Control Relay (51C21) provides blower operation for Power Saver and field installs remote to the unit. Filter Switch Kit (97C85) is used in conjunction with the Filter light. CHA11-953-1353 units with electric heat require a Current Sensing Relay (59C94) and with hot water heat a Proving Relay (51C22) for operation of No Heat light. CHA11-1853-2753 models with electric heat or hot water heat require a Proving Relay (14F57) for operation of the No Heat light.

Optional RMF11 Roof Mounting Frame — Sturdy mounting frame mates to the single package 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 RMFH11 Roof Mounting Frame — Frame mates to CHA11 unit and provides horizontal end supply and return air (over/under) duct connection. Supply air connection is in end of frame. Return air connection is made at evaporator section end of unit. Shipped knocked down for ease of shipping and handling; it is easily field assembled. See dimension drawing and installation detail sketch for more information.

Optional RMFA11 Roof Mounting Frame — Retrofit adapter frame is available for CHA11 model replacement of existing CHA8 unit installations. The RMFA11 frame adapts to the existing RMF3 frame and provides a weather sealed connection with minimum installation cost. RMFA11 frame is 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. See dimensions drawing and installation detail sketch.

Optional PSD11 Power Saver — Available factory or field installed. Lennox Power Saver system consists of: mechanically linked outdoor air and recirculated air dampers. Damper blades are gasketed for tight seal and quiet operation. Formed damper blades rotate smoothly in nylon bearings. The positioning of these dampers is accomplished by a 24 volt modulating spring return damper actuator and controlled by the room thermostat or transmitter, discharge sensor and enthalpy control. The enthalpy control allows (0 to 100%) outdoor air to be used for "free" cooling when outdoor air humidity and temperature is acceptable. An outdoor air hood with rain eliminator vanes is furnished and field installs over the outdoor air dampers external to the unit. For field installation the two damper sections slide in cavities provided in the unit cabinet. Power Saver is shipped factory wired and only requires plug-in field connection.

Optional OAD11 Minimum Fresh Air Dampers (CHA11-1853-2753 only) — Damper section complete with cleanable polyurethane air filter field installs external to the unit cabinet. Available for manual or automatic operation. Damper assembly allows a fixed amount of outdoor air into the system and can be adjusted for air quantities up to 25%. Automatic damper operation is available with the addition of a spring return 3 position damper actuator. Actuator only requires plug-in connection for operation. Order Automatic Fresh Air Damper Kit 99C94. Kit also includes adjustable potentiometer for minimum fresh air setting.

Optional GED11 Gravity Exhaust Air Dampers — Dampers field install in space provided in the unit. Pressure operated extruded aluminum dampers operate smoothly in nylon bearings. Damper blades are equipped with seal gaskets for tight seal and quiet operation.

Optional PED11 Power Exhaust Dampers (CHA11-1853-2753 only) — Field installs in space provided in the unit cabinet. Fans provide system pressure relief and are interlocked to run when return air dampers are closed and supply air blowers are operating. Motors are overload protected. Pressure operated extruded aluminum dampers ride in nylon bearings and are equipped with seal gaskets resulting in tight seal and quiet operation. Dampers prevent blow-back and outdoor air infiltration during off cycle.

Optional OADM11 Minimum Fresh Air Damper Section (CHA11-953-1353 only) — Field installs external to the unit cabinet. Available for manual or automatic operation. Manually operated damper may be adjusted and locked in place to provide outdoor air quantities of up to 25%. Automatic damper operation is available with the addition of a spring return 3 position damper actuator. Order Automatic Fresh Air Damper Kit 27F89.

Optional Night Setback Controls — Automatically programs the unit for night setback operation. Field installed clocks available are 24 Hour Skip-A-Day without Reserve (88C86) or with Reserve (88C85). Also 7 Day Time Clock without Reserve (88C84) or with Reserve (88C83). System room thermostat or transmitter controls both day and night operation.

Optional Low Ambient Control Kit — System will operate satisfactorily down to 35°F (2°C) outdoor air temperature without additional controls. If air conditioning operation is required below 35°F (2°C) a field installed low ambient control kit (LB-50352BB) can be added enabling the unit to operate down to 0°F (-18°C).

Optional Disconnect Mounting Kit (CHA11-953-1353 only) — Disconnect kit (LB-38208BA) provides a convenient mounting location for field furnished remote disconnect switch. Kit field installs to outside of unit cabinet adjacent to electrical inlets.

SPECIFICATIONS

Model No.		CHA11-953	CHA11-1353	
★ARI Standard 270 SRN (bels)		8.6	8.8	
*ARI Standard 210 Ratings	Total cooling capacity — Btuh (kW)	91,000 (26.7)	123,000 (36.0)	
	Total units watts	11,050	15,000	
	EER (Btuh/Watts)	8.25	8.20	
	Dehumidifying capacity	27%	27%	
Refrigerant (22) charge		15 lbs. — 2 oz. (6.9 kg)	22 lbs. — 0 oz. (10.0 kg)	
Evaporator Blower	Blower wheel nominal diameter x width — in. (mm)	(1) 15 x 9 (381 x 229)	(1) 15 x 15 (381 x 381)	
	Motor horsepower (W) (minimum — maximum)	1-1/2 — 3 (1119 — 2238)	3 — 5 (2238 — 3730)	
Evaporator Coil	Net face area — sq. ft. (m²)	8.3 (0.77)	12.0 (1.11)	
	Tube diameter — in. (mm) & Number of rows	1/2 (13) — 3	1/2 (13) — 3	
	Fins per inch (m)	15 (590)	15 (590)	
Condenser Coil	Net face area — sq. ft. (m²)	14.6 (1.35)	19.8 (1.85)	
	Tube diameter — in. (mm) & Number of rows	3/8 (10) — 3	3/8 (10) — 3	
	Fins per inch (m)	20 (785)	20 (785)	
Condenser Fans	Diameter — in. (mm) & Number of blades	(2) 20 (508) — 4	(2) 24 (610) — 4	
	Air volume — cfm (L/s) (factory setting)	6000 (2830)	8500 (4010)	
	Motor horsepower (W)	(2) 1/3 (249)	(2) 1/2 (373)	
	Motor watts (factory setting)	850	1150	
Condensate drain size mpt — in. (mm)		(2) 3/4 (19)	(2) 3/4 (19)	
Number & size of filters — in. (mm)		(4) 16 x 20 x 1 (406 x 508 x 25)	(6) 16 x 20 x 1 (406 x 508 x 25)	
Net weight of basic unit — lbs. (kg) (1 Package)		1205 (547)	1585 (719)	
Optional Hot Water Coil	Model Number & Net weight	HWC11-95 (65 lbs.) (29 kg)	HWC11-135 (75 lbs.) (34 kg)	
	**Heating capacity range — Btuh (kW)	100,000 — 250,000 (29.3 — 73.3)	100,000 — 275,000 (29.3 — 80.6)	
	Net face area — sq. ft. (m²)	4.5 (0.42)	6.5 (0.60)	
	Tube diameter — in. (mm) — Number of rows	1/2 (13) — 2	1/2 (13) — 2	
	Fins per inch (m)	16 (630)	10 (395)	
Optional Electric Heat	Model No.	ECH11-95	ECH11-135	
	kW input range	15-30-45-60	15-30-45-60	
Optional Roof Mounting Frames — (Net weight)		Standard Frame	RMF11-95 (150 lbs.) (68 kg)	RMF11-135 (180 lbs.) (82 kg)
		Horizontal Frame	RMFH11-95 (205 lbs.) (93 kg)	RMFH11-135 (245 lbs.) (111 kg)
		Adapter Frame	RMFA11-95 (255 lbs.) (116 kg)	RMFA11-135 (290 lbs.) (132 kg)
Optional Power Saver & Controls — (Net weight)		PSD11-95 (97 lbs.) (44 kg)	PSD11-135 (163 lbs.) (74 kg)	
Optional Gravity Exhaust Dampers (Net weight)		GED11-95 (13 lbs.) (6 kg)	GED11-135 (18 lbs.) (8 kg)	
Optional Ceiling Supply & Return Step-Down Diffuser — (Net weight)		RTD11-95 (84 lbs.) (38 kg)	RTD11-135 (95 lbs.) (43 kg)	
Optional Ceiling Supply & Return Flush Diffuser — (Net weight)		FD11-95 (84 lbs.) (38 kg)	FD11-135 (95 lbs.) (43 kg)	
Optional Ceiling Supply & Return Transitions — (Net weight)		SRT11-95 (28 lbs.) (13 kg)	SRT11-135 (32 lbs.) (15 kg)	
Optional Minimum Fresh Air Dampers (Manual) — (Net weight)		OADM11-95 (57 lbs.) (26 kg)	OADM11-135 (114 lbs.) (52 kg)	
Optional Automatic Fresh Air Damper Kit — (Net weight)		27F89 (15 lbs.) (7 kg)	27F89 (15 lbs.) (7 kg)	
Optional Remote Status Panel		SP11 (12F83)	SP11 (12F83)	
Optional Remote Switching Status Panel		SSP11 (12F84)	SSP11 (12F84)	
Optional Disconnect Mounting Kit		LB-38208BA (10 lbs.) (5 kg)	LB-38208BA (10 lbs.) (5 kg)	
††Optional Powered Mixing Damper Boxes		ZDB1-400 (151 lbs.) (23 kg), ZDB1-800 (76 lbs.) (34 kg), ZDB1-1200 (108 lbs.) (49 kg) & ZDB1-1600 (119 lbs.) (54 kg)		
Electrical characteristics		200 to 575 volt — 60 hertz — 3 phase		

★ Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210; 450 cfm (maximum) evaporator air volume per ton (60 L/s per kW) of cooling, 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air.

**Capacity range shown is possible with varying supply conditions and air volumes. See coil capacity curves.

††See bulletin (Page 7) in Accessories section for complete data.

SPECIFICATIONS

Model No.			CHA11-1853	CHA11-2753
*At ARI Standard 360 Test Conditions	Total cooling capacity Btuh (kW)		180,000 (52.7)	240,000 (70.3)
	Total unit watts		21,900	28,800
	EER (Btuh/Watts)		8.2	8.3
	Dehumidifying capacity		27%	26%
Refrigerant (22) charge			26 lbs. — 2 oz. (11.9 kg)	39 lbs. — 8 oz. (17.9 kg)
Evaporator Blower	Blower wheel nominal diameter x width — in. (mm)		15 x 9 (381 x 229)	15 x 15 (381 x 381)
	Motor horsepower (W) (minimum-maximum)		5 (3730)	5 — 7.5 (3730 — 5595)
Evaporator Coil	Net face area — sq. ft. (m²)		17.2 (1.60)	23.5 (2.18)
	Tube diameter — in. (mm) & No. of rows		1/2 (13) — 3	1/2 (13) — 3
	Fins per inch (m)		13 (510)	15 (590)
Condenser Coil	Net face area — sq. ft. (m²)		31.9 (2.96) (total)	38.9 (3.61)
	Tube diameter — in. (mm) & No. of rows		(1) 3/8 (10) — 3 & (1) 3/8 (10) — 4	3/8 (10) — 4
	Fins per inch (m)		20 (785)	20 (785)
Condenser Fans	Diameter — in. (mm) & No. of blades		(1) 24 (610) — 4 & (1) 26 (660) — 5	(2) 26 (660) — 5
	Air volume — cfm (L/s) (factory setting)		(1) 4400 (2076) & (1) 6700 (3161)	(2) 6700 (3162)
	Motor horsepower (W)		(1) 1/2 (746) & (1) 1 (746)	(2) 1 (746)
	Motor watts (factory setting)		(1) 550 & (1) 1100	(2) 1050
Condensate drain size mpt — in. (mm)			(2) 1-1/4 (31.6)	(2) 1-1/4 (31.6)
No. & size of filters — in. (mm)			(9) 16 x 20 x 1 (406 x 508 x 25)	(11) 16 x 20 x 1 (406 x 508 x 25)
Net weight of basic unit — lbs. (kg) (1 Package)			2300 (1043)	2900 (1315)
Optional Electric Heat	Model No.		ECH11-185	ECH11-275
	kW input range		20-30-45-60-75	30-45-60-75-90
Optional Hot Water Coil	Model No. & Net Weight		HWC11-185 (120 lbs.) (54 kg)	HWC11-275 (130 lbs.) (59 kg)
	**Heating capacity range — Btuh (kW)		175,000 — 560,000 (51.2 — 164.1)	200,000 — 600,000 (58.6 — 175.8)
	Net face area — sq. ft. (m²)		9.9 (0.92)	11.2 (1.04)
	Tube diameter — in. (mm) — No. of rows		1/2 (13) — 2	1/2 (13) — 2
	Fins per inch (m)		16 (630)	16 (630)
Optional Roof Mounting Frames — (Net weight)		Standard Frame	RMF11-185 (265 lbs.) (120 kg)	RMF11-275 (315 lbs.) (143 kg)
		Horizontal Frame	RMFH11-185 (375 lbs.) (170 kg)	RMFH11-275 (440 lbs.) (200 kg)
		Adapter Frame	RMFA11-185 (470 lbs.) (213 kg)	RMFA11-275 (510 lbs.) (231 kg)
Optional Power Saver & Controls — (Net weight)			PSD11-185 (235 lbs.) (107 kg)	PSD11-275 (290 lbs.) (132 kg)
Optional Gravity Exhaust Dampers (Net weight)			GED11-185 (25 lbs.) (11 kg)	GED11-275 (30 lbs.) (14 kg)
Optional Power Exhaust Dampers	Model No. — (Net weight)		PED11-185 (110 lbs.) (50 kg)	PED11-275 (150 lbs.) (68 kg)
	Exhaust Fans	Diameter — in. (mm) & No. of blades	(2) 18 (457) — 5	(3) 18 (457) — 5
		Total air volume — cfm (L/s)	5050 (2383)	7050 (3327)
		Motor horsepower (W)	(2) 1/4 (187)	(3) 1/4 (187)
		Watts input (total)	730	1100
Optional Ceiling Supply & Return Step-Down Diffuser — (Net weight)			RTD11-185 (120 lbs.) (54 kg)	RTD11-275 (170 lbs.) (77 kg)
Optional Ceiling Supply & Return Flush Diffuser — (Net weight)			FD11-185 (120 lbs.) (54 kg)	FD11-275 (170 lbs.) (77 kg)
Optional Ceiling Supply & Return Transitions — (Net weight)			SRT11-185 (70 lbs.) (32 kg)	SRT11-275 (80 lbs.) (36 kg)
Optional Fresh Air Damper & Filter Size — in. (mm) — (Net weight)			OAD11-185 (90 lbs.) (41 kg) 1 — 25 x 27 x 1 (635 x 686 x 25)	OAD11-275 (115 lbs.) (52 kg) 1 — 26 x 31 x 1 (660 x 787 x 25)
Optional Automatic OAD11 Damper Kit — (Net weight)			99C94 (15 lbs.) (7 kg)	99C94 (15 lbs.) (7 kg)
Optional Remote Status Panel			SP11 (12F83)	SP11 (12F83)
Optional Remote Switching Status Panel			SSP11 (12F84)	SSP11 (12F84)
†Optional Powered Mixing Damper Boxes			ZDB1-400 (51 lbs.) (23 kg), ZDB1-800 (76 lbs.) (34 kg), ZDB1-1200 (108 lbs.) (49 kg) & ZDB1-1600 (119 lbs.) (54 kg)	
Electrical characteristics			200 to 575 volt — 60 hertz — 3 phase	

*Rated in accordance with ARI Standard 360; 450 cfm (maximum) evaporator air volume per ton (60 L/s per kW) of cooling, 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air.

**Capacity range shown is possible with varying supply conditions and air volumes. See coil capacity curves.

†See bulletin (Page 7) in Accessories section for complete data.

COOLING RATINGS

NOTE — To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the tables, see Miscellaneous Engineering Data section, page 11.

CHA11-953 COOLING CAPACITY (With One Compressor Only Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			65°F (18°C)						75°F (24°C)						85°F (29°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	1180	2500	14.7	50,100	3280	.72	.82	.91	14.1	48,000	3560	.73	.83	.93	13.4	45,700	3840	.74	.85	.95
	1416	3000	15.2	51,700	3330	.75	.86	.96	14.5	49,400	3620	.76	.88	.99	13.8	47,100	3910	.78	.90	1.00
	1652	3500	15.6	53,100	3380	.79	.91	1.00	14.9	50,800	3680	.80	.93	1.00	14.2	48,400	3970	.82	.95	1.00
67°F (19.4°F)	1180	2500	15.7	53,700	3400	.57	.66	.76	15.1	51,400	3700	.58	.68	.77	14.4	49,100	3990	.59	.69	.79
	1416	3000	16.2	55,200	3450	.59	.70	.80	15.5	52,800	3750	.60	.71	.82	14.8	50,400	4050	.61	.72	.84
	1652	3500	16.5	56,400	3490	.61	.73	.84	15.8	53,900	3790	.62	.75	.86	15.1	51,400	4090	.63	.76	.89
71°F (21.7°C)	1180	2500	16.9	57,500	3520	.44	.53	.62	16.1	55,100	3840	.45	.54	.63	15.4	52,600	4140	.45	.54	.64
	1416	3000	17.3	59,000	3570	.45	.55	.65	16.6	56,500	3890	.45	.56	.66	15.8	53,900	4200	.46	.56	.67
	1652	3500	17.6	60,200	3610	.46	.57	.68	16.9	57,600	3930	.46	.58	.69	16.1	54,900	4240	.47	.59	.71

CHA11-953 TOTAL COOLING CAPACITY (With Both Compressors Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			85°F (29°C)						95°F (35°C)						105°F (41°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	76°F 24°C	80°F 27°C				84°F 29°C	KW	Btuh				76°F 24°C	80°F 27°C	84°F 29°C				kW	Btuh	76°F 24°C
L/s	cfm	kW	Btuh																	
63°F (17.2°C)	1180	2500	26.5	90,300	8080	.73	.84	.94	25.1	85,800	8640	.75	.85	.96	23.9	81,400	9160	.76	.88	.99
	1416	3000	27.3	93,000	8210	.77	.88	.99	25.9	88,500	8780	.78	.90	1.00	24.6	83,900	9310	.80	.93	1.00
	1652	3500	28.0	95,500	8320	.80	.93	1.00	26.6	90,900	8900	.82	.95	1.00	25.3	86,400	9440	.84	.98	1.00
67°F (19.4°F)	1180	2500	28.5	97,200	8400	.58	.68	.77	27.1	92,500	8990	.59	.69	.79	25.7	87,800	9540	.60	.70	.81
	1416	3000	29.3	99,900	8520	.60	.71	.82	27.8	94,900	9110	.61	.72	.84	26.3	89,900	9660	.62	.74	.86
	1652	3500	29.9	102,100	8620	.62	.74	.86	28.4	96,900	9210	.63	.76	.89	26.9	91,800	9770	.65	.78	.91
71°F (21.7°C)	1180	2500	30.6	104,400	8720	.45	.54	.63	29.2	99,500	9340	.45	.54	.64	27.7	94,400	9920	.45	.55	.65
	1416	3000	31.4	107,000	8840	.45	.55	.66	29.9	101,900	9460	.46	.56	.67	28.3	96,600	10,040	.46	.58	.69
	1652	3500	32.0	109,200	8930	.46	.58	.69	30.5	103,900	9560	.47	.59	.71	28.8	98,400	10,140	.47	.60	.73

CHA11-1353 COOLING CAPACITY (With One Compressor Only Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			65°F (18°C)						75°F (24°C)						85°F (29°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
	Dry Bulb					Dry Bulb						Dry Bulb								
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	1652	3500	19.8	67,500	4800	.72	.82	.91	18.8	64,200	5190	.73	.84	.94	17.9	61,200	5590	.75	.85	.96
	2006	4250	20.4	69,500	4880	.75	.86	.97	19.4	66,100	5280	.77	.89	1.00	18.5	63,000	5680	.79	.91	1.00
	2360	5000	20.9	71,300	4950	.79	.91	1.00	19.9	67,900	5360	.81	.94	1.00	19.0	64,700	5760	.83	.96	1.00
67°F (19.4°F)	1652	3500	21.2	72,200	4990	.57	.67	.76	20.2	68,900	5400	.58	.68	.78	19.2	65,600	5810	.59	.69	.79
	2006	4250	21.7	74,100	5070	.59	.70	.80	20.7	70,700	5480	.60	.71	.82	19.7	67,300	5890	.61	.73	.84
	2360	5000	22.2	75,800	5130	.62	.73	.85	21.2	72,200	5540	.63	.75	.87	20.1	68,600	5960	.64	.77	.90
71°F (21.7°C)	1652	3500	22.6	77,100	5180	.44	.53	.62	21.6	73,600	5600	.45	.54	.63	20.6	70,200	6030	.45	.54	.64
	2006	4250	23.2	79,000	5250	.45	.55	.65	22.1	75,400	5680	.45	.56	.66	21.1	71,900	6110	.46	.57	.68
	2360	5000	23.6	80,600	5310	.46	.57	.68	22.5	76,900	5740	.47	.58	.70	21.5	73,200	6170	.47	.59	.72

CHA11-1353 TOTAL COOLING CAPACITY (With Both Compressors Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			85°F (29°C)						95°F (35°C)						105°F (41°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	76°F 24°C	80°F 27°C				84°F 29°C	KW	Btuh				76°F 24°C	80°F 27°C	84°F 29°C				kW	Btuh	76°F 24°C
L/s	cfm	kW	Btuh																	
63°F (17.2°C)	1652	3500	35.8	122,300	11,280	.75	.85	.96	34.1	116,400	12,080	.76	.88	.98	32.4	110,700	12,880	.78	.90	1.00
	2006	4250	36.9	126,000	11,470	.79	.91	1.00	35.1	119,900	12,280	.80	.93	1.00	33.4	114,000	13,090	.83	.96	1.00
	2360	5000	37.9	129,400	11,640	.83	.96	1.00	36.2	123,400	12,460	.85	.99	1.00	34.3	117,100	13,280	.87	1.00	1.00
67°F (19.4°F)	1652	3500	38.5	131,200	11,730	.59	.69	.79	36.6	124,900	12,560	.60	.71	.81	34.8	118,800	13,370	.61	.72	.83
	2006	4250	39.4	134,600	11,890	.61	.73	.84	37.5	127,900	12,730	.62	.75	.87	35.6	121,400	13,540	.64	.77	.89
	2360	5000	40.2	137,300	12,030	.64	.77	.90	38.2	130,500	12,860	.65	.79	.92	36.3	123,900	13,680	.67	.81	.95
71°F (21.7°C)	1652	3500	41.1	140,400	12,180	.45	.54	.64	39.2	133,800	13,040	.45	.55	.65	37.3	127,300	13,880	.46	.56	.67
	2006	4250	42.1	143,700	12,330	.46	.57	.68	40.1	136,900	13,190	.46	.58	.69	38.1	130,100	14,030	.47	.59	.71
	2360	5000	42.9	146,500	12,460	.47	.59	.72	40.8	139,300	13,320	.48	.61	.73	38.8	132,400	14,160	.48	.62	.75

COOLING RATINGS

NOTE — To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the tables, see Miscellaneous Engineering Data section, page 11.

CHA11-1853 COOLING CAPACITY (With 5 Ton Compressor Only Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			65°F (18°C)						75°F (24°C)						85°F (29°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	787	5000	19.2	65,600	4530	.72	.82	.91	18.3	62,500	4910	.73	.83	.93	17.5	59,600	5280	.75	.85	.95
	984	6250	19.9	68,000	4630	.76	.86	.97	19.0	64,700	5000	.77	.88	.99	18.1	61,700	5390	.78	.90	1.00
	1180	7500	20.5	69,900	4700	.79	.91	1.00	19.5	66,600	5090	.81	.94	1.00	18.6	63,500	5470	.83	.96	1.00
67°F (19.4°F)	787	5000	20.6	70,400	4720	.58	.67	.76	19.7	67,200	5110	.59	.68	.77	18.8	64,100	5500	.59	.69	.79
	984	6250	21.3	72,800	4810	.60	.70	.80	20.3	69,400	5200	.61	.71	.82	19.4	66,200	5600	.62	.73	.84
	1180	7500	21.9	74,700	4880	.62	.73	.85	20.9	71,200	5270	.63	.75	.87	19.9	67,800	5670	.64	.77	.89
71°F (21.7°C)	787	5000	22.1	75,300	4900	.45	.54	.62	21.1	71,900	5300	.46	.54	.63	20.2	68,800	5710	.46	.55	.64
	984	6250	22.7	77,600	4980	.46	.55	.65	21.7	74,200	5390	.46	.56	.66	20.7	70,800	5800	.47	.57	.67
	1180	7500	23.3	79,500	5050	.47	.58	.68	22.2	75,900	5460	.47	.58	.70	21.2	72,500	5880	.48	.59	.71

CHA11-1853 COOLING CAPACITY (With 10 Ton Compressor Only Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			65°F (18°C)						75°F (24°C)						85°F (29°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	1574	5000	37.7	128,500	8930	.73	.82	.92	36.3	123,800	9740	.74	.84	.93	34.9	119,000	10,530	.75	.85	.95
	1967	6250	39.2	133,800	9130	.76	.87	.98	37.8	128,900	9950	.77	.88	.99	36.2	123,400	10,740	.78	.90	1.00
	2360	7500	40.6	138,400	9300	.80	.92	1.00	39.0	133,000	10,120	.81	.94	1.00	37.4	127,500	10,910	.83	.96	1.00
67°F (19.4°F)	1574	5000	40.9	139,400	9330	.58	.67	.76	39.4	134,300	10,170	.59	.68	.77	37.7	128,700	10,970	.59	.69	.79
	1967	6250	42.4	144,800	9530	.60	.70	.80	40.8	139,100	10,370	.61	.71	.82	39.0	133,100	11,170	.61	.73	.84
	2360	7500	43.7	149,200	9680	.62	.73	.85	41.9	143,000	10,530	.63	.75	.87	40.1	136,700	11,320	.64	.76	.89
71°F (21.7°C)	1574	5000	44.1	150,600	9730	.45	.54	.62	42.4	144,700	10,590	.46	.54	.63	40.6	138,600	11,400	.46	.55	.64
	1967	6250	45.7	155,900	9920	.46	.55	.65	43.9	149,700	10,780	.46	.56	.66	41.9	143,000	11,580	.46	.57	.67
	2360	7500	46.9	160,200	10,070	.47	.57	.68	45.0	153,500	10,930	.47	.58	.69	42.9	146,500	11,730	.48	.59	.71

CHA11-1853 TOTAL COOLING CAPACITY (With Both Compressors Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			85°F (29°C)						95°F (35°C)						105°F (41°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
	63°F (17.2°C)	2360	5000	52.3	178,400	15,780	.75	.85	.95	50.0	170,600	16,890	.76	.87	.97	47.6	162,300	17,880	.77	.89
2950		6250	54.3	185,300	16,110	.78	.90	1.00	51.8	176,900	17,200	.80	.92	1.00	49.3	168,100	18,190	.82	.95	1.00
3540		7500	56.0	191,200	16,370	.83	.96	1.00	53.5	182,400	17,480	.85	.98	1.00	50.8	173,500	18,460	.87	1.00	1.00
67°F (19.4°F)	2360	5000	56.6	193,000	16,460	.59	.69	.79	54.0	184,300	17,560	.60	.70	.80	51.3	175,100	18,550	.61	.72	.82
	2950	6250	58.5	199,700	16,750	.62	.73	.84	55.7	190,200	17,840	.62	.74	.86	52.8	180,300	18,820	.64	.76	.88
	3540	7500	60.1	205,000	16,970	.64	.76	.89	57.1	194,900	18,060	.65	.78	.91	54.1	184,500	19,030	.67	.81	.94
71°F (21.7°C)	2360	5000	60.9	207,900	17,100	.46	.55	.64	58.1	198,200	18,210	.46	.55	.65	55.1	188,100	19,200	.46	.56	.66
	2950	6250	62.9	214,500	17,380	.46	.57	.67	59.8	204,100	18,480	.47	.58	.69	56.7	193,300	19,450	.47	.59	.70
	3540	7500	64.4	219,700	17,590	.48	.59	.71	61.2	208,800	18,680	.48	.60	.73	57.9	197,400	19,640	.49	.62	.75

CHA11-2753 COOLING CAPACITY (With One 10 Ton Compressor Only Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			65°F (18°C)						75°F (24°C)						85°F (29°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	1652	7000	38.3	130,700	9060	.72	.82	.92	36.9	125,800	9890	.73	.84	.94	35.3	120,400	10,680	.75	.85	.96
	2006	8500	39.7	135,300	9240	.76	.87	.98	38.1	130,100	10,070	.77	.89	1.00	36.5	124,500	10,860	.78	.91	1.00
	2360	10,000	40.9	139,400	9390	.79	.92	1.00	39.2	133,900	10,220	.81	.94	1.00	37.5	128,100	11,020	.83	.96	1.00
67°F (19.4°F)	1652	7000	41.5	141,500	9460	.57	.67	.76	39.9	136,000	10,300	.58	.68	.78	38.1	130,000	11,100	.59	.69	.79
	2006	8500	42.8	146,000	9620	.59	.70	.80	41.0	139,900	10,470	.60	.71	.82	39.2	133,600	11,260	.61	.73	.84
	2360	10,000	43.8	149,600	9750	.62	.73	.85	42.0	143,200	10,600	.62	.75	.87	40.0	136,500	11,390	.64	.77	.89
71°F (21.7°C)	1652	7000	44.7	152,500	9860	.44	.53	.62	42.9	146,300	10,720	.45	.54	.63	40.9	139,700	11,520	.45	.54	.64
	2006	8500	46.0	156,900	10,010	.45	.55	.65	44.0	150,200	10,870	.45	.56	.66	42.0	143,300	11,670	.46	.57	.67
	2360	10,000	47.0	160,400	10,140	.46	.57	.68	45.0	153,500	10,990	.46	.58	.69	42.8	146,200	11,790	.47	.59	.71

COOLING RATINGS

NOTE — To determine sensible capacity, leaving wet bulb and dry bulb temperatures not shown in the tables, see Miscellaneous Engineering Data section, page 11.

CHA11-2753 TOTAL COOLING CAPACITY (With Both Compressors Operating)

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Condenser Coil																	
			85°F (29°C)						95°F (35°C)						105°F (41°C)					
			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor Watts Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb		
	L/s	cfm	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	KW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C	kW	Btuh	76°F 24°C	80°F 27°C	84°F 29°C			
63°F (17.2°C)	3304	7000	70.6	241,000	21,360	.75	.85	.96	67.4	230,000	22,820	.76	.87	.98	64.0	218,400	24,150	.78	.90	1.00
	4012	8500	73.0	249,000	21,720	.79	.91	1.00	69.5	237,300	23,190	.80	.93	1.00	66.0	225,300	24,520	.82	.96	1.00
	4720	10,000	75.1	256,200	22,040	.83	.96	1.00	71.6	244,400	23,510	.85	.99	1.00	67.8	231,200	24,830	.87	1.00	1.00
67°F (19.4°F)	3304	7000	76.2	259,900	22,210	.59	.69	.79	72.5	247,500	23,680	.60	.70	.81	68.7	234,400	24,990	.61	.72	.83
	4012	8500	78.3	267,200	22,520	.61	.73	.84	74.4	253,900	23,980	.62	.74	.86	70.4	240,100	25,280	.64	.76	.89
	4720	10,000	80.0	273,100	22,770	.64	.77	.89	76.0	259,200	24,230	.65	.79	.92	71.7	244,700	25,520	.67	.81	.95
71°F (21.7°C)	3304	7000	81.9	279,500	23,050	.45	.54	.64	77.9	265,800	24,530	.45	.55	.65	73.7	251,500	25,840	.46	.56	.67
	4012	8500	84.0	286,600	23,340	.46	.57	.67	79.7	272,100	24,810	.46	.58	.69	75.3	257,100	26,100	.47	.59	.71
	4720	10,000	85.7	292,500	23,580	.47	.59	.71	81.3	277,300	25,030	.48	.60	.73	76.7	261,600	26,310	.48	.62	.75

CHA11-953 AND CHA11-1353 ELECTRICAL DATA

Model No.			CHA11-953								CHA11-1353							
Line voltage data — 60 hz — 3 phase			200V		230V		460V		575V		200V		230V		460V		575V	
Compressors (2)	Rated load amps (total)		30.2		30.2		14.8		11.8		41.0		39.4		21.0		16.8	
	Locked rotor amps (total)		171		171		82		66		270		252		126		106	
Condenser	Full load amps (total)		4.6		4.2		2.2		1.6		6.8		6.0		3.0		2.4	
Fan Motors (2)	Locked rotor amps (total)		9.4		9.4		4.6		4.0		12.4		12.4		6.2		5.8	
Evaporator Blower Motor	Motor	hp	1-1/2	3	1-1/2	3	1-1/2	3	1-1/2	3	3	5	3	5	3	5	3	5
	Output	W	1119	2238	1119	2238	1119	2238	1119	2238	2238	3730	2238	3730	2238	3730	2238	3730
	Full load amps		6.0	11.0	5.2	9.6	2.6	4.8	2.1	3.9	11.0	17.5	9.6	15.2	4.8	7.6	3.9	6.1
Locked rotor amps		39.0	65.0	34.0	56.0	17.0	28.0	15.0	25.6	65.0	100.0	56.0	90.0	28.0	45.0	25.6	35.0	
Recommended max. fuse size (amps)			50	60	50	50	25	30	20	20	70	80	70	80	40	40	30	35
Unit Power Factor			.89	.88	.89	.88	.89	.88	.89	.88	.89	.88	.89	.88	.89	.88	.89	.88
*Minimum Circuit Ampacity			44.6	49.6	43.4	47.8	21.5	23.7	17.0	18.8	63.2	69.7	60.0	65.6	31.4	34.2	25.2	27.4

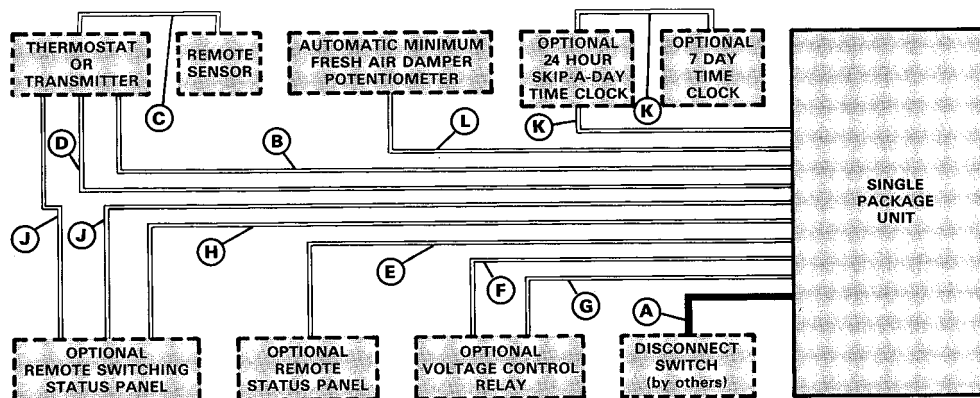
*Refer to Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
NOTE — Extremes of operating range are plus and minus 10% of line voltage.

CHA11-1853 AND CHA11-2753 ELECTRICAL DATA

Model No.			CHA11-1853				CHA11-2753							
Line voltage data — 60 hz — 3 phase			200V	230V	460V	575V	200V		230V		460V		575V	
Compressors (2)	Rated load amps (total)		60.4	58.5	30.4	22.5	79		79		40.8		30.0	
	Locked rotor amps (total)		352	343	174	139	434		434		222		178	
Condenser	Full load amps (total)		9.4	8.2	4.3	3.5	12.8		10.4		5.6		4.6	
Fan Motors (2)	Locked rotor amps (total)		21.2	20.2	9.8	7.7	30		28		13.2		9.6	
Evaporator Blower Motor	Motor Output	hp	5	5	5	5	5	7-1/2	5	7-1/2	5	7-1/2	5	7-1/2
		W	3730	3730	3730	3730	3730	5595	3730	5595	3730	5595	3730	5595
	Full load amps (total)		17.5	15.2	7.6	5.9	17.5	25.3	15.2	22.0	7.6	11.0	5.9	8.5
	Locked rotor amps (total)		100	90	45	35	100	160	90	127	45	64	35	53
Optional Exhaust Fan Motors	Motor Output (No.)	hp	(2) — 1/4	(2) — 1/4	(2) — 1/4	(2) — 1/4	(3) — 1/4		(3) — 1/4		(3) — 1/4		(3) — 1/4	
		W	(2) — 187	(2) — 187	(2) — 187	(2) — 187	(3) — 187		(3) — 187		(3) — 187		(3) — 187	
	Full load amps (total)		2.8	2.8	1.42	1.12	4.2		4.2		2.2		1.68	
	Locked rotor amps (total)		6.5	6.5	2.6	2.6	9.8		9.8		3.9		3.9	
Recom. max. fuse size (amps)	(With Exhaust Fans)		125	125	60	50	150	150	150	150	70	70	60	60
Unit Power Factor	(With Exhaust Fans)		.86	.86	.86	.86	.88	.87	.88	.87	.88	.87	.88	.87
*Minimum Circuit Ampacity	(With Exhaust Fans)		100	95	49	37	124	132	119	126	62	65	46	49

*Refer to 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.

FIELD WIRING



A — Three wire power (See Electrical Data Table)

B — Seven wire low voltage — DC only

Five wire low voltage — DC only (with Remote Switching Status Panel Only)

C — Two wire low voltage — DC only (with transmitter)

D — Two wire low voltage — AC only (with sub-base)

E — Nine wire low voltage — AC only

F — Three wire low voltage — DC only (with Remote Switching Status Panel or sub-base and Power Saver)

G — Two wire low voltage — AC only (with Remote Switching Status Panel or subbase and Power Saver)

H — Twelve wire low voltage — AC only

J — Two wire low voltage — DC only

K — Three wire low voltage — AC only

L — Three wire low voltage — DC only

— NOTE — Field wiring not furnished —

NOTE — All wiring must be in accordance with regulations of the Canadian Electrical Code (CEC).
AC and DC wires must be in separate harnesses.

CHA11-953 OPTIONAL ELECTRIC HEAT DATA

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	*Minimum Circuit Ampacity	
					11-1/2 hp	3 hp
					†(1119W)	†(2238W)
ECH11-95-15 (52 lbs.) (24 kg)	1	200	10.4	35,500	47.0	53.3
		210	11.5	39,200		
		220	12.6	43,000		
		230	13.8	47,100		
		240	15.0	51,200		
	1	440	12.6	43,000	25.8	28.5
		460	13.8	47,100		
		480	15.0	51,200		
	1	550	12.5	42,700	20.6	22.9
		575	13.7	46,800		
		600	15.0	51,200		
††ECH11-95-30 (56 lbs.) (25 kg)	2	200	20.8	71,000	---	92.8
		210	23.0	78,500		
		220	25.2	86,000		
		230	27.5	93,900		
		240	30.0	102,400		
	1	440	25.2	86,000	---	51.1
		460	27.5	93,900		
		480	30.0	102,400		
	1	550	25.0	85,300	---	41.0
		575	27.6	94,200		
		600	30.0	102,400		
††ECH11-95-45 (59 lbs.) (27 kg)	3	200	31.3	106,800	---	132.4
		210	34.5	117,700		
		220	37.8	129,000		
		230	41.3	141,000		
		240	45.0	153,600		
	2	440	37.8	129,000	---	73.6
		460	41.3	141,000		
		480	45.0	153,600		
	2	550	37.5	128,000	---	59.0
		575	41.3	141,000		
		600	45.0	153,600		
††ECH11-95-60 (64 lbs.) (29 kg)	4	200	41.7	142,300	---	171.9
		210	46.0	157,000		

*Refer to 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 — ECH11-95-30, ECH11-95-45 and ECH11-95-60 are not available with 1-1/2 hp (1119W) motor.

CHA11-1353 OPTIONAL ELECTRIC HEAT DATA

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	*Minimum Circuit Ampacity	
					3 hp	5 hp
					†(2238W)	†(3730W)
ECH11-135-15 (46 lbs.) (21 kg)	1	200	10.4	35,500	63.2	69.7
		210	11.5	39,200		
		220	12.6	43,000		
		230	13.8	47,100		
		240	15.0	51,200		
	1	440	12.6	43,000	31.4	34.2
		460	13.8	47,100		
		480	15.0	51,200		
	1	550	12.5	42,700	25.2	27.4
		575	13.7	46,000		
		600	15.0	51,200		
†ECH11-135-30 (50 lbs.) (23 kg)	2	200	20.8	71,000	92.8	100.9
		210	23.0	78,500		
		220	25.2	86,000		
		230	27.5	93,900		
		240	30.0	102,400		
	1	440	25.2	86,000	51.1	54.6
		460	27.5	93,900		
		480	30.0	102,400		
	1	550	25.0	85,300	41.0	43.8
		575	27.6	94,200		
		600	30.0	102,400		
†ECH11-135-45 (53 lbs.) (24 kg)	3	200	31.3	106,800	132.4	140.5
		210	34.5	117,700		
		220	37.8	129,000		
		230	41.3	141,000		
		240	45.0	153,600		
	2	440	37.8	129,000	73.6	77.1
		460	41.3	141,000		
		480	45.0	153,600		
	2	550	37.5	123,000	59.0	61.8
		575	41.3	141,000		
		600	45.0	153,600		
†ECH11-135-60 (58 lbs.) (26 kg)	4	200	41.7	142,300	171.9	180.0
		210	46.0	157,000		
		220	50.4	172,000		
		230	55.1	188,100		
		240	60.0	204,800		
	2	440	50.4	172,000	96.3	99.8
		460	55.1	188,100		
		480	60.0	204,800		
	2	550	50.0	170,700	77.0	79.8
		575	55.1	188,100		
		600	60.0	204,800		

*Refer to 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.

CHA11-1853 OPTIONAL ELECTRIC HEAT DATA

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	*Minimum Circuit Ampacity
					5 hp (3730W)
ECH11-185-20 (135 lbs.) (61 kg)	2	200	13.9	47,400	96
		210	15.3	52,200	
		220	16.8	57,300	91
		230	18.4	62,700	
		240	20.0	68,200	
	1	440	16.8	57,300	47
		460	18.4	62,700	
		480	20.0	68,200	
	1	550	16.8	57,300	36
		575	18.4	62,700	
		600	20.0	68,200	
ECH11-185-30 (135 lbs.) (61 kg)	2	200	20.8	71,000	96
		210	23.0	78,500	
		220	25.2	86,000	108
		230	27.5	93,900	
		240	30.0	102,400	
	1	440	25.2	86,000	52
		460	27.5	93,900	
		480	30.0	102,400	
	1	550	25.0	85,300	42
		575	27.6	94,200	
		600	30.0	102,400	
ECH11-185-45 (145 lbs.) (66 kg)	3	200	31.3	106,800	135
		210	34.5	117,700	
		220	37.8	129,000	152
		230	41.3	141,000	
		240	45.0	153,600	
	2	440	37.8	129,000	74
		460	41.3	141,000	
		480	45.0	153,600	
	2	550	37.5	123,000	59
		575	41.3	141,000	
		600	45.0	153,600	
ECH11-185-60 (145 lbs.) (66 kg)	4	200	41.7	142,300	174
		210	46.0	157,000	
		220	50.4	172,000	197
		230	55.1	188,100	
		240	60.0	204,800	
	2	440	50.4	172,000	96
		460	55.1	188,100	
		480	60.0	204,800	
	2	550	50.0	170,700	77
		575	55.1	188,100	
		600	60.0	204,800	
ECH11-185-75 (155 lbs.) (70 kg)	5	200	52.1	177,700	213
		210	57.4	196,000	
		220	63.0	215,000	242
		230	68.9	235,000	
		240	75.0	255,900	
	3	440	63.0	215,000	118
		460	68.9	235,000	
		480	75.0	255,900	
	3	550	63.0	215,000	94
		575	68.9	235,000	
		600	75.0	255,900	

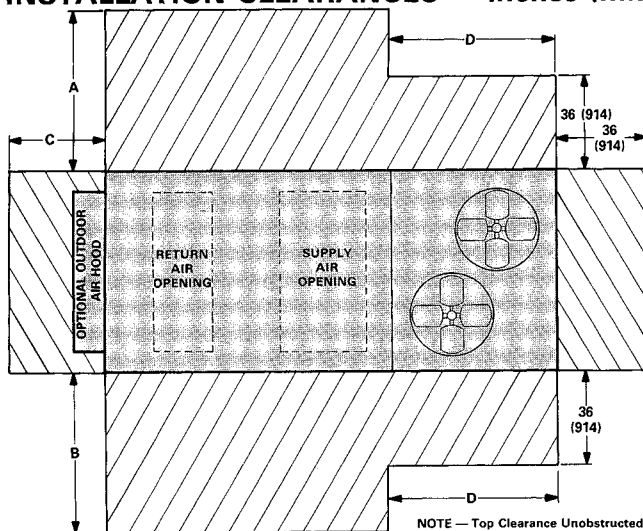
*Refer to Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

CHA11-2753 OPTIONAL ELECTRIC HEAT DATA

Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	*Minimum Circuit Ampacity	
					5 hp (3730W)	17-1/2 hp (5595W)
ECH11-275-30 (135 lbs.) (61 kg)	2	200	20.8	71,000	118	125
		210	23.0	78,500		
		220	25.2	86,000	114	121
		230	27.5	93,900		
		240	30.0	102,400		
	1	440	25.2	86,000	59	62
		460	27.5	93,900		
		480	30.0	102,400		
	1	550	25.0	85,300	44	47
		575	27.6	94,200		
		600	30.0	102,400		
ECH11-275-45 (145 lbs.) (66 kg)	3	200	31.3	106,800	135	145
		210	34.5	117,700		
		220	37.8	129,000	152	160
		230	41.3	141,000		
		240	45.0	153,600		
	2	440	37.8	129,000	74	78
		460	41.3	141,000		
		480	45.0	153,600		
	2	550	37.5	123,000	59	63
		575	41.3	141,000		
		600	45.0	153,600		
ECH11-275-60 (145 lbs.) (66 kg)	4	200	41.7	142,300	174	183
		210	46.0	157,000		
		220	50.4	172,000	197	205
		230	55.1	188,100		
		240	60.0	204,800		
	2	440	50.4	172,000	96	100
		460	55.1	188,100		
		480	60.0	204,800		
	2	550	50.0	170,700	77	80
		575	55.1	188,100		
		600	60.0	204,800		
ECH11-275-75 (155 lbs.) (70 kg)	5	200	52.1	177,700	213	222
		210	57.4	196,000		
		220	63.0	215,000	242	250
		230	68.9	235,000		
		240	75.0	255,900		
	3	440	63.0	215,000	117	121
		460	68.9	235,000		
		480	75.0	255,900		
	3	550	63.0	215,000	94	97
		575	68.9	235,000		
		600	75.0	255,900		
ECH11-275-90 (155 lbs.) (70 kg)	6	200	62.5	213,300	252	261
		210	68.9	235,000		
		220	75.6	258,000	286	294
		230	82.7	282,000		
		240	90.0	307,100		
	3	440	75.6	258,000	139	143
		460	82.7	282,000		
		480	90.0	307,100		
	3	550	75.6	258,000	111	114
		575	82.7	282,000		
		600	90.0	307,100		

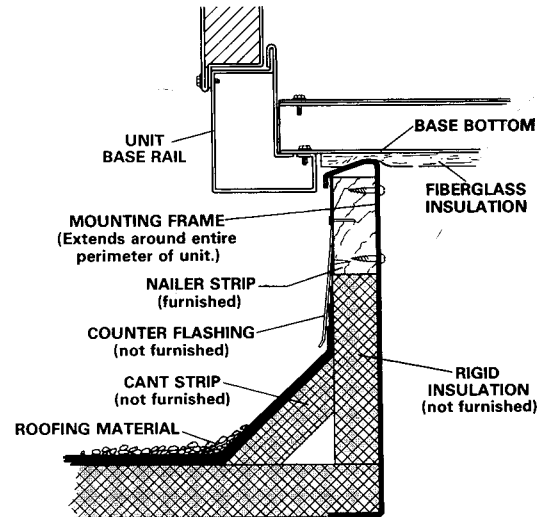
*Refer to Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

INSTALLATION CLEARANCES — inches (mm)

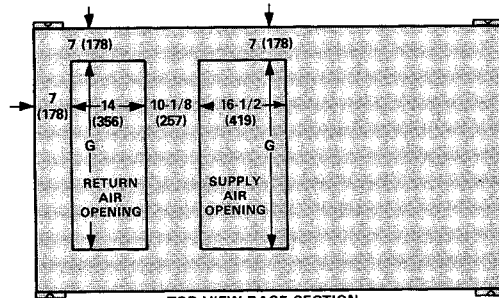


Model No.		A	B	C	D
CHA11-953	in.	36	50	24	40
	mm	914	1270	610	1016
CHA11-1353	in.	36	68	32	45-1/2
	mm	914	1727	813	1156
CHA11-1853	in.	68	68	44	44
	mm	1727	1727	1118	1118
CHA11-2753	in.	78	78	44	62
	mm	1981	1981	1118	1575

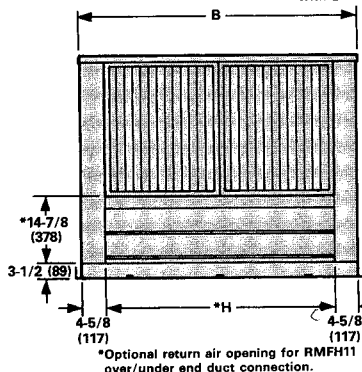
TYPICAL FLASHING DETAIL FOR RMF11 ROOF MOUNTING FRAME



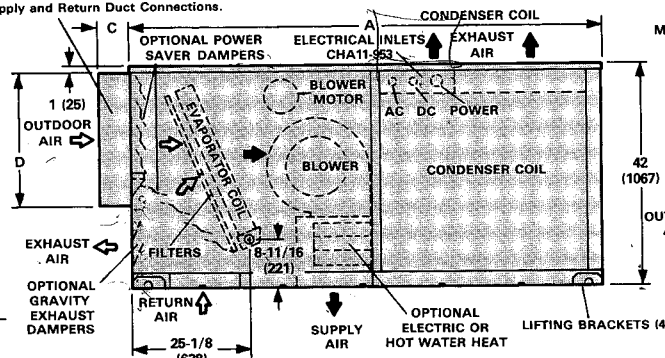
DIMENSIONS — inches (mm) CHA11-953 AND CHA11-1353



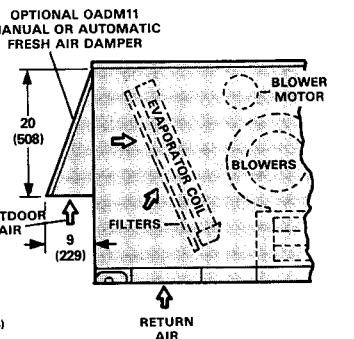
TOP VIEW BASE SECTION
OPTIONAL OADA11 AUTOMATIC FRESH AIR DAMPERS
Reposition (Rotate 180°) on CHA11-1353 Model
with End Supply and Return Duct Connections.



EXHAUST & OUTDOOR AIR INTAKE VIEW



FRONT VIEW



FRONT VIEW WITH
OPTIONAL OUTDOOR AIR DAMPER

Model No.		A	B	C	D	E	F	G	H
CHA11-953	in.	87-7/8	50	6-1/8	20-3/4	40-3/4	4-1/2	35-9/16	40-3/4
	mm	2232	1270	156	527	1035	114	903	1035
CHA11-1353	in.	93-3/8	68	14-1/8	32	63	2-3/8	53-9/16	58-3/4
	mm	2372	1727	359	813	1600	60	1360	1492

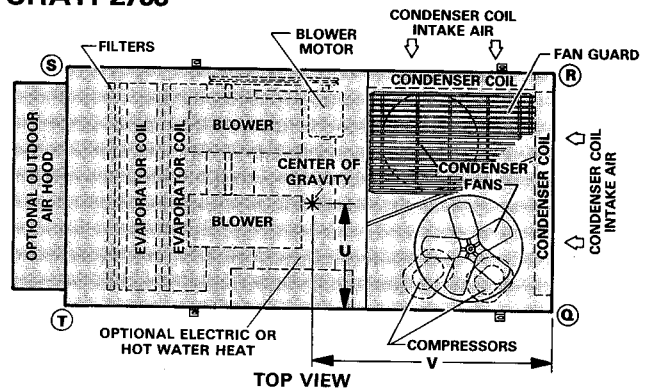
CORNER WEIGHTS

Model No.			J	K	L	M
CHA11-953	With Power Saver	lbs.	335	309	350	321
		kg.	152	140	159	146
	Without Power Saver	lbs.	334	256	348	267
		kg.	151	116	158	121
CHA11-1353	With Power Saver	lbs.	419	451	431	465
		kg.	190	205	195	211
	Without Power Saver	lbs.	419	362	431	373
		kg.	190	164	195	169

CENTER OF GRAVITY

Model No.			N	O
CHA11-953	With Power Saver	in.	45-3/4	25-1/2
		mm	1162	648
	Without Power Saver	in.	49-1/2	25-1/2
		mm	1257	648
CHA11-1353	With Power Saver	in.	45	34-1/2
		mm	1143	876
	Without Power Saver	in.	50	34-1/2
		mm	1270	876

CHA11-1853 AND CHA11-2753

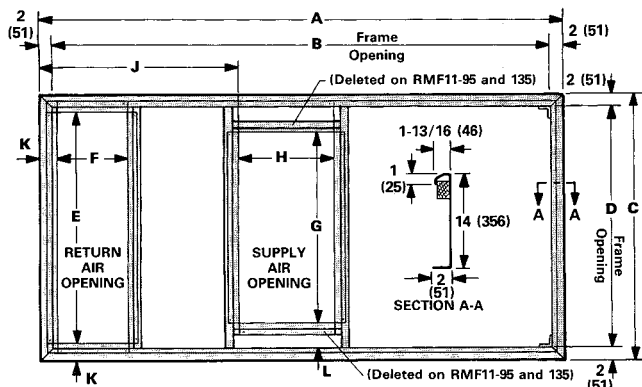


CENTER OF GRAVITY

Model No.			U	V
CHA11-1853	Basic Unit	in.	31-1/2	53-1/2
		mm	800	1359
	With Power Saver	in.	30-1/2	54-1/2
		mm	775	1384
	With Power Saver/Exhaust Fans	in.	30-1/2	55-1/2
		mm	775	1410
CHA11-2753	Basic unit	in.	37-1/2	67-3/4
		mm	953	1721
	With Power Saver	in.	36-1/2	68-3/4
		mm	927	1746
	With Power Saver/Exhaust Fans	in.	36-1/2	69-3/4
		mm	927	1772

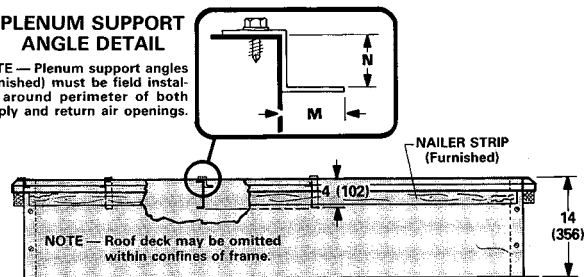
-- 42 --

RMF11 ROOF MOUNTING FRAME WITH DOUBLE DUCT OPENING



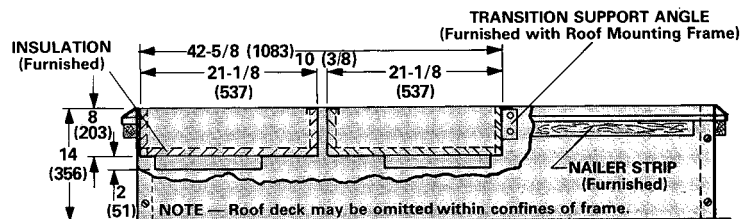
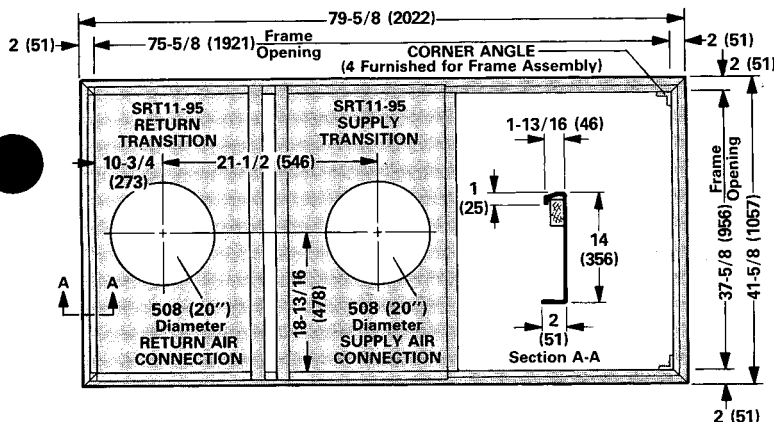
PLENUM SUPPORT
ANGLE DETAIL

NOTE — Plenum support angles (furnished) must be field installed around perimeter of both supply and return air openings.

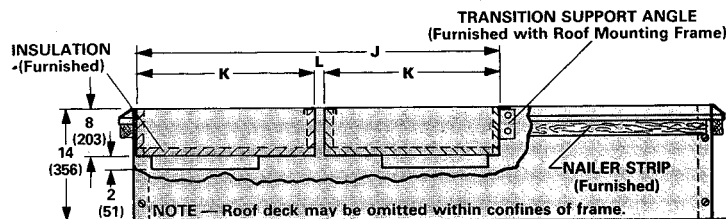
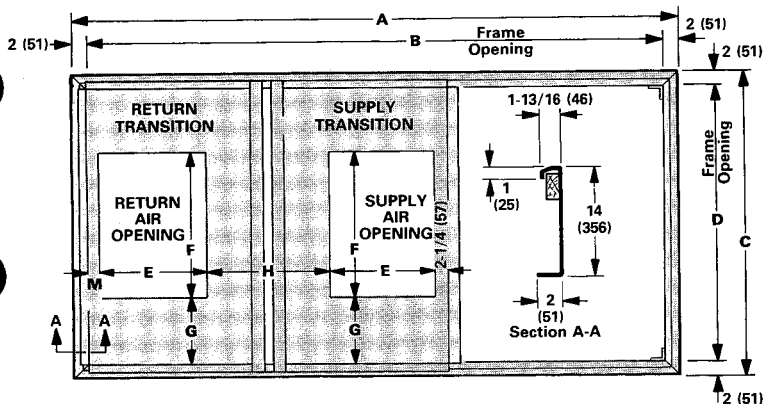


Model No.		A	B	C	D	E	F	G	H	J	K	L	M	N
RMF11-95	in.	79-5/8	75-5/8	41-5/8	37-5/8	35-7/8	14-5/16	35-7/8	16-13/16	26-15/16	2-7/8	---	3/4	7/8
	mm	2022	1921	1057	956	911	364	911	427	684	73	---	19	22
RMF11-135	in.	85-1/8	81-1/8	59-5/8	55-5/8	53-7/8	14-5/16	53-7/8	16-13/16	26-15/16	2-7/8	---	3/4	7/8
	mm	2162	2061	1514	1413	1368	364	1368	427	684	73	---	19	22
RMF11-185	in.	108-1/8	104-1/8	59-5/8	55-5/8	54-1/4	18-5/8	47-5/8	27-5/8	40-9/16	2-11/16	4	5/8	11/16
	mm	2746	2645	1514	1413	1378	473	1210	702	1030	68	102	16	17
RMF11-275	in.	133-11/16	129-11/16	69-5/8	65-5/8	64-1/4	23-1/8	53-5/8	27-5/8	45-15/16	2-11/16	6	5/8	11/16
	mm	3396	3294	1768	1667	1632	587	1362	702	1167	68	152	16	17

RMF11-95 ROOF MOUNTING FRAME WITH
FD11-95 & RTD11-95 CEILING SUPPLY AND RETURN TRANSITIONS



RMF11-135, 185 & 275 ROOF MOUNTING FRAME WITH
FD11 & RTD11-135, 185 & 275 CEILING SUPPLY AND RETURN TRANSITIONS

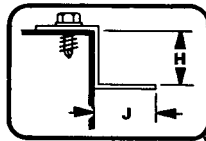


Model No.		A	B	C	D	E	F	G	H	J	K	L	M
RMF11-135	in.	85-1/8	81-1/8	59-5/8	55-5/8	18	28	13-13/16	4-5/8	42-5/8	21-1/8	3/8	1
	mm	2162	2061	1514	1413	457	711	351	117	1083	537	10	25
RMF11-185	in.	108-1/8	104-1/8	59-5/8	55-5/8	18	36	9-13/16	25-3/4	66-1/4	32-7/8	1/2	2-1/4
	mm	2746	2645	1514	1413	457	914	249	654	1683	835	13	57
RMF11-275	in.	133-11/16	129-11/16	69-5/8	65-5/8	24	48	8-13/16	19-3/4	72-1/4	35-7/8	1/2	2-1/4
	mm	3396	3294	1768	1667	610	1219	224	502	1835	911	13	57

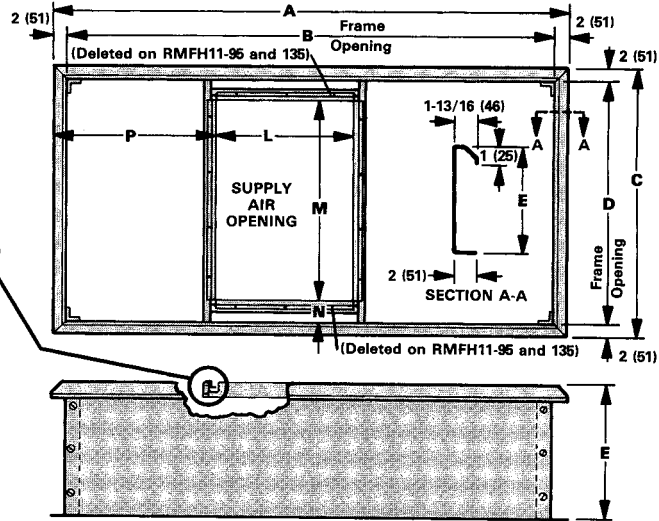
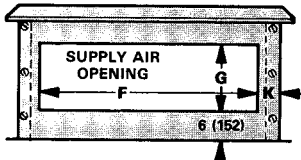
DIMENSIONS — inches (mm) **RMFH11 HORIZONTAL MOUNTING FRAME**

PLENUM SUPPORT ANGLE DETAIL

Optional duct connection support angles (furnished) for field installation around perimeter of unit supply air opening.

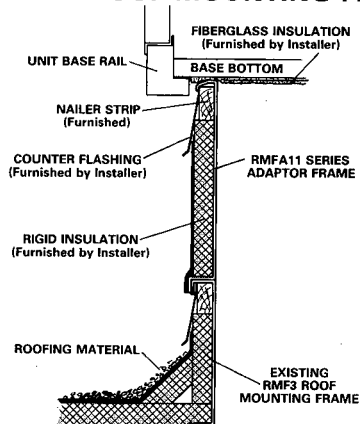


NOTE — Return air duct connection is to unit. Refer to unit dimension drawing for location and size.



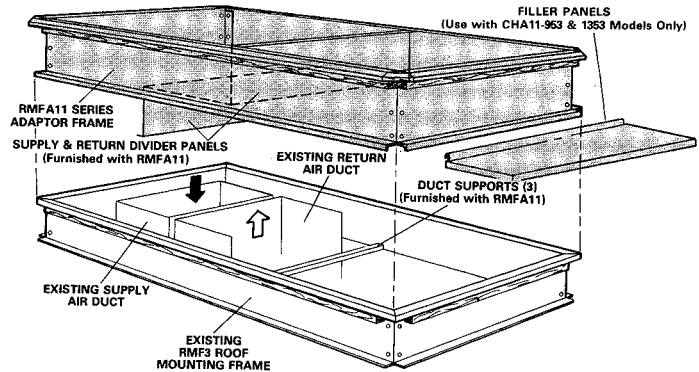
Model No.		A	B	C	D	E	F	G	H	J	K	L	M	N	P
RMFH11-95	in.	79-5/8	75-5/8	41-5/8	37-5/8	23	31	12	3/4	7/8	3-13/16	16-13/16	35-7/8	----	26-15/16
	mm	2022	1921	1057	956	584	787	305	19	22	97	427	911	----	684
RMFH11-135	in.	85-1/8	81-1/8	59-5/8	55-5/8	23	48	12	3/4	7/8	3-13/16	16-13/16	53-7/8	----	26-15/16
	mm	2162	2061	1514	1413	584	1219	305	19	22	97	427	1368	----	684
RMFH11-185	in.	108-1/8	104-1/8	59-5/8	55-5/8	30	48	17	5/8	11/16	3-13/16	27-5/8	47-5/8	4	40-9/16
	mm	2746	2645	1514	1413	762	1219	432	16	17	97	702	1210	102	1030
RMFH11-275	in.	133-11/16	129-11/16	69-5/8	65-5/8	30	58	17	5/8	11/16	3-13/16	27-5/8	53-5/8	6	45-15/16
	mm	3396	3294	1768	1667	762	1473	432	16	17	97	702	1362	152	1167

TYPICAL FLASHING DETAIL FOR RMFA AND RMF3 ROOF MOUNTING FRAME

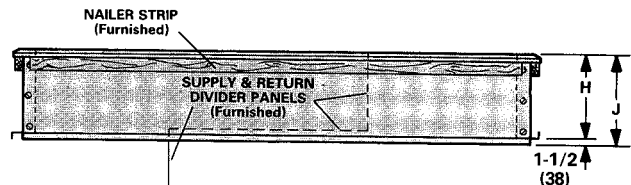
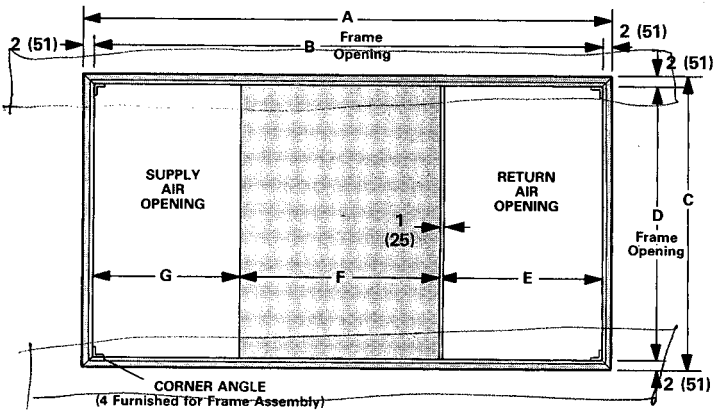


NOTE — RMF11-953 frame shown. Other sizes similar.

RMFA11 ROOF MOUNTING FRAME WITH RMF3 ROOF MOUNTING FRAME

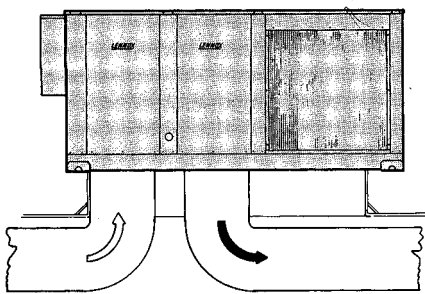


RMFA11 ADAPTER MOUNTING FRAME

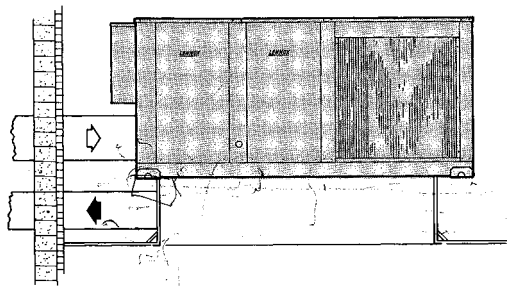


Model No.		A	B	C	D	E	F	G	H	J
RMFA11-95	in.	79-5/8	75-5/8	41-5/8	37-5/8	23-1/4	28-3/8	23	17-1/2	19
	mm	2022	1921	1057	956	591	594	584	445	483
RMFA11-135	in.	85-1/8	81-1/8	59-5/8	55-5/8	17-1/8	33-1/8	29-7/8	17-1/2	19
	mm	2162	2061	1514	1413	435	841	759	445	483
RMFA11-185	in.	108-1/8	104-1/8	59-5/8	55-5/8	36	34-5/8	32-1/2	18	19-1/2
	mm	2746	2645	1514	1413	914	879	826	457	495
RMFA11-275	in.	133-11/16	129-11/16	69-5/8	65-5/8	42-3/8	44-9/16	32-1/2	22	23-1/2
	mm	3675	3278	1768	1667	1076	1132	826	559	597

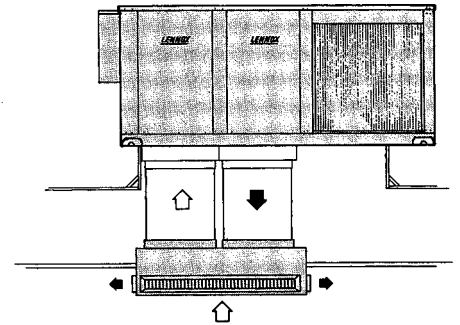
AIR PATTERN



Separate Supply and Return (Double) Duct



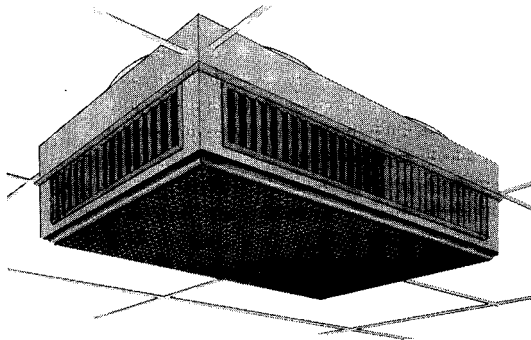
End Supply and Return Air
(over and under) Duct Application.



Combination Supply and Return Air Ceiling Diffuser
Step-down of Flush Grille

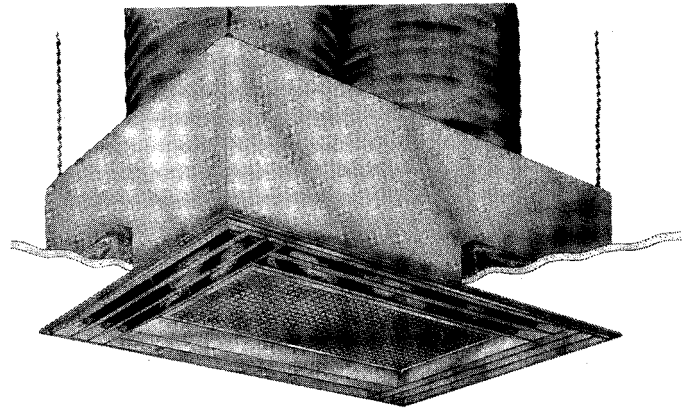
COMBINATION CEILING SUPPLY AND RETURN AIR DIFFUSERS

STEP-DOWN CEILING DIFFUSER (RTD11-95 Model Shown)



Optional RTD11 Combination Ceiling Supply and Return Diffuser Assembly — 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. RTD11-95 model diffuser is used with the CHA11-953 unit, RTD11-135 with the CHA11-1353, RTD11-185 with the CHA11-1853 and RTD11-275 with the CHA11-2753.

FLUSH CEILING DIFFUSER (FD11-95 Model Shown)

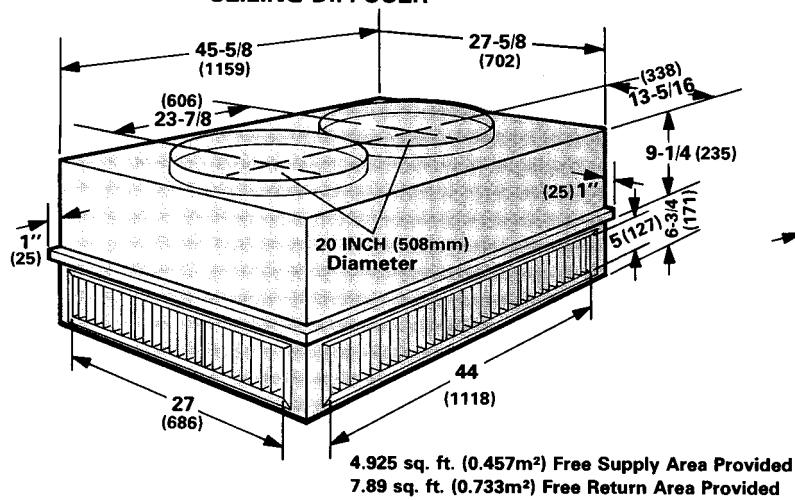


Optional FD11 Combination Ceiling Supply and Return Diffuser Assembly — Flush mount diffuser installs almost flush with the ceiling level and discharges conditioned air out through fixed blade louvers on all four sides. Fixed blade louvers insure that air flow will be evenly distributed. Return air enters 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. FD11-95 model diffuser is used with the CHA11-953 unit, FD11-135 with the CHA11-1353, FD11-185 and the CHA11-1853 and FD11-275 with the CHA11-2753.

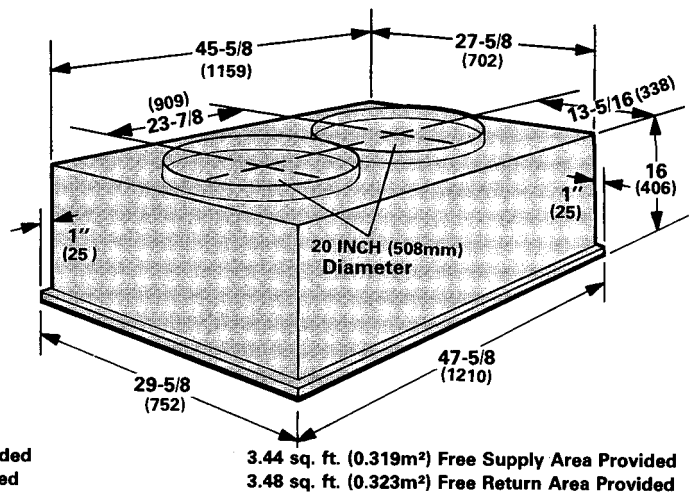
Optional Supply and Return Transitions — Transitions field install in the roof mounting frame and provide segregated and simple duct connections to supply and return diffuser. Completely insulated galvanized steel transitions have flanges for ease of duct connection. Duct from the transitions to the 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 the minimum costs and labor requirements. SRT11-95 transitions are used with the RMF11-95 roof mounting frame, SRT11-135 with the RMF11-135 frame, SRT11-185 with the RMF11-185 frame and SRT11-275 with the RMF11-275 frame.

DIMENSIONS — inches (mm)

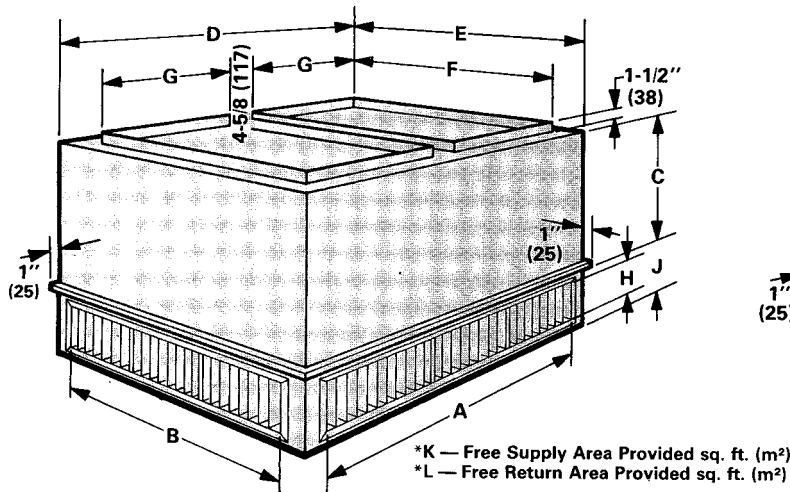
**RTD11-95 STEP-DOWN
CEILING DIFFUSER**



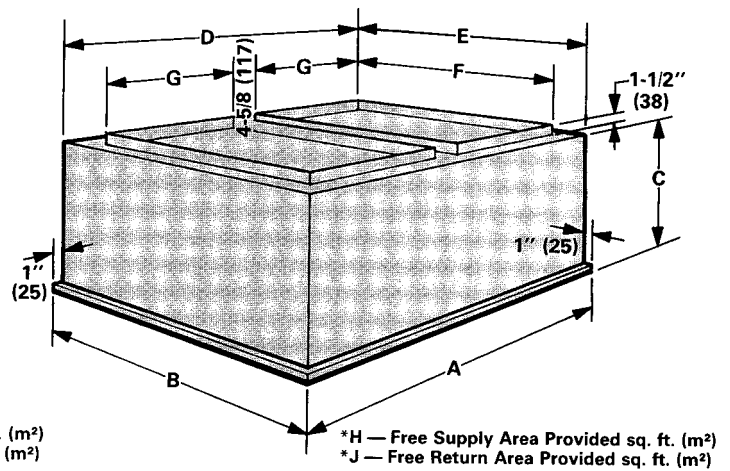
**FD11-95 FLUSH
CEILING DIFFUSER**



**RTD11-135, RTD11-185 & RTD11-275
STEP-DOWN CEILING DIFFUSER**



**FD11-135, FD11-185 & FD11-275
FLUSH CEILING DIFFUSER**

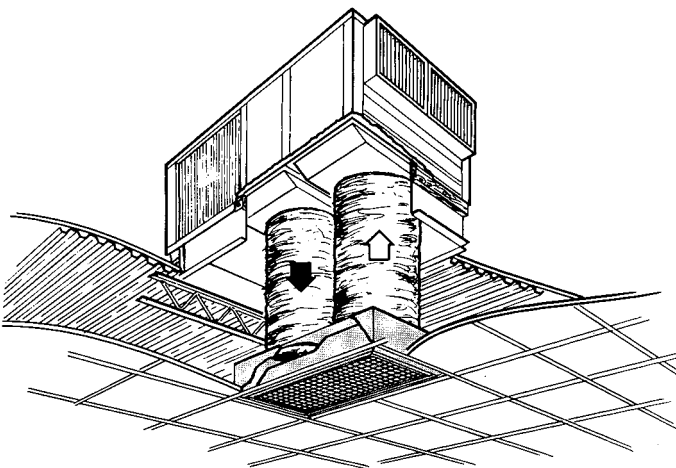


Model No.		A	B	C	D	E	F	G	H	J	*K	*L
RTD11-135	in.	44	32	20-5/8	45-5/8	33-5/8	28	18	5	6-3/4	5.27	9.78
	mm	1118	813	524	1159	854	711	457	127	171	0.490	0.909
RTD11-185	in.	44	44	26-1/8	45-5/8	45-5/8	36	18	6	7-3/4	6.01	12.35
	mm	1118	1118	664	1159	1159	914	457	152	197	0.558	1.147
RTD11-275	in.	55	55	31-1/2	57-5/8	57-5/8	48	24	7	8-7/8	8.77	19.04
	mm	1397	1397	800	1464	1464	1219	610	178	225	0.815	1.769

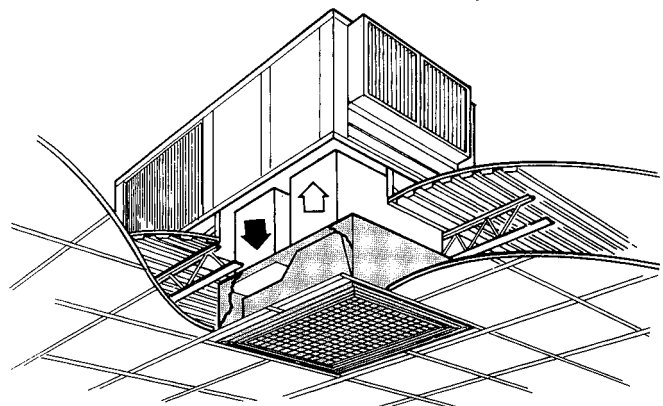
Model No.		A	B	C	D	E	F	G	*H	*J
FD11-135	in.	47-5/8	35-5/8	24	45-5/8	33-5/8	28	18	3.73	4.57
	mm	1210	905	610	1159	854	711	457	0.347	0.425
FD11-185	in.	47-5/8	47-5/8	30	45-5/8	45-5/8	36	18	4.35	6.63
	mm	1210	1210	762	1159	1159	914	457	0.404	0.616
FD11-275	in.	59-5/8	59-5/8	36	57-5/8	57-5/8	48	24	5.45	12.57
	mm	1514	1514	914	1464	1464	1219	610	0.506	0.168

DIFFUSER AIR PATTERN

**FLUSH DIFFUSER
(FD11-95 Model Shown)**



**FLUSH DIFFUSER
(FD11-135 Model Shown)**



BLOWER DATA

CHA11-953 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)													
	.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)	
	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)
2600 (1230)	670	.90 (671)	700	1.05 (783)	730	1.20 (895)	770	1.35 (1007)	800	1.45 (1082)	830	1.60 (1194)	855	1.70 (1268)
2800 (1320)	705	1.10 (821)	735	1.25 (933)	775	1.40 (1044)	810	1.55 (1156)	835	1.70 (1268)	860	1.80 (1343)	895	1.95 (1455)
3000 (1420)	740	1.35 (1007)	775	1.50 (1119)	810	1.65 (1231)	840	1.80 (1343)	870	1.95 (1455)	905	2.10 (1567)	930	2.30 (1716)
3200 (1510)	780	1.60 (1194)	820	1.75 (1306)	845	1.85 (1380)	875	2.00 (1492)	910	2.20 (1641)	935	2.40 (1790)	960	2.55 (1902)
3400 (1600)	825	1.85 (1380)	855	2.05 (1529)	885	2.20 (1641)	920	2.35 (1753)	945	2.55 (1902)	970	2.75 (2052)	995	2.90 (2163)
3600 (1700)	860	2.15 (1604)	895	2.30 (1716)	925	2.50 (1865)	950	2.70 (2014)	975	2.90 (2163)	---	---	---	---
3800 (1790)	905	2.45 (1828)	935	2.70 (2014)	960	2.90 (2163)	---	---	---	---	---	---	---	---

NOTE — Data is measured external to the unit cabinet with the air filter in place. See Page 49 for Accessory Air Resistance data.

CHA11-1353 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)													
	.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)	
	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)
3500 (1650)	550	.75 (560)	595	.90 (671)	630	1.10 (821)	665	1.25 (933)	700	1.35 (1007)	730	1.40 (1044)	760	1.50 (1119)
3600 (1700)	560	.85 (634)	605	1.00 (746)	640	1.15 (858)	670	1.35 (1007)	710	1.40 (1044)	735	1.50 (1119)	770	1.65 (1231)
3800 (1790)	575	.95 (709)	625	1.15 (858)	655	1.30 (970)	685	1.40 (1044)	720	1.55 (1156)	755	1.70 (1268)	780	1.85 (1380)
4000 (1890)	605	1.15 (858)	640	1.35 (1007)	665	1.45 (1082)	705	1.55 (1156)	730	1.70 (1268)	770	1.85 (1380)	800	2.00 (1492)
4200 (1980)	625	1.30 (970)	660	1.45 (1082)	685	1.65 (1231)	720	1.70 (1268)	750	1.90 (1417)	780	2.05 (1529)	815	2.20 (1641)
4400 (2080)	645	1.50 (1119)	670	1.65 (1231)	700	1.75 (1306)	735	1.90 (1417)	770	2.10 (1567)	800	2.30 (1716)	825	2.40 (1790)
4600 (2170)	670	1.70 (1268)	685	1.80 (1343)	720	1.95 (1455)	755	2.15 (1604)	780	2.30 (1716)	815	2.45 (1828)	840	2.65 (1977)
4800 (2270)	680	1.80 (1343)	705	1.95 (1455)	740	2.15 (1604)	770	2.35 (1753)	805	2.55 (1902)	830	2.75 (2052)	865	2.95 (2201)
5000 (2360)	685	1.90 (1417)	720	2.15 (1604)	760	2.40 (1790)	780	2.60 (1940)	820	2.80 (2089)	850	3.00 (2238)	875	3.20 (2387)
5200 (2450)	710	2.20 (1641)	740	2.40 (1790)	775	2.60 (1940)	810	2.85 (2126)	840	3.10 (2313)	870	3.30 (2462)	895	3.45 (2574)
5400 (2500)	730	2.40 (1790)	765	2.60 (1940)	790	2.85 (2126)	825	3.15 (2350)	860	3.40 (2536)	880	3.55 (2648)	915	3.75 (2798)
5600 (2640)	750	2.65 (1977)	780	2.85 (2126)	820	3.15 (2350)	845	3.45 (2574)	875	3.65 (2723)	905	3.85 (2872)	930	4.05 (3021)

NOTE — Data is measured external to the unit cabinet with the air filter in place. See Page 49 for Accessory Air Resistance data.

CHA11-1853 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)													
	.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)	
	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)
5800 (2740)	620	1.95 (1455)	660	2.15 (1604)	695	2.45 (1828)	730	2.60 (1940)	760	2.85 (2126)	795	3.10 (2313)	820	3.30 (2462)
6000 (2830)	635	2.10 (1567)	675	2.35 (1753)	710	2.65 (1977)	745	2.80 (2089)	775	3.05 (2275)	805	3.30 (2462)	835	3.55 (2648)
6200 (2930)	650	2.30 (1716)	690	2.55 (1902)	725	2.85 (2126)	760	3.00 (2238)	790	3.30 (2462)	815	3.55 (2648)	850	3.80 (2835)
6400 (3020)	665	2.50 (1865)	705	2.75 (2052)	735	3.05 (2275)	770	3.25 (2425)	800	3.50 (2611)	830	3.75 (2798)	860	4.05 (3021)
6600 (3110)	680	2.65 (1977)	720	2.90 (2163)	750	3.20 (2387)	785	3.45 (2574)	815	3.75 (2798)	840	4.00 (2984)	875	4.30 (3208)
6800 (3210)	695	2.80 (2089)	730	3.10 (2313)	760	3.40 (2536)	800	3.70 (2760)	830	4.00 (2984)	855	4.20 (3133)	885	4.55 (3394)
7000 (3300)	710	3.00 (2238)	745	3.30 (2462)	775	3.60 (2686)	810	3.90 (2909)	840	4.20 (3133)	865	4.45 (3320)	900	4.80 (3581)
7200 (3400)	720	3.25 (2425)	760	3.50 (2611)	790	3.85 (2872)	820	4.15 (3096)	850	4.45 (3320)	880	4.75 (3544)	---	---
7400 (3490)	735	3.45 (2574)	770	3.75 (2798)	805	4.10 (3059)	835	4.40 (3282)	865	4.70 (3506)	---	---	---	---

NOTE — Data is measured external to the unit cabinet with the air filter in place. See Page 49 for Accessory Air Resistance data.

BLOWER DATA

CHA11-2753 BLOWER PERFORMANCE

Air Volume cfm (L/s)	STATIC PRESSURE EXTERNAL TO UNIT — Inches Water Gauge (Pa)																							
	.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.0 (250)		1.30 (325)		1.50 (375)			
	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)	RPM	BHP (W)		
7600 (3590)	595	2.35 (1753)	640	2.60 (1940)	680	2.95 (2201)	715	3.25 (2425)	750	3.55 (2648)	785	3.80 (2835)	820	4.10 (3059)	855	4.35 (3245)	890	4.65 (3469)	975	5.65 (4215)	1030	6.45 (4812)		
7800 (3680)	610	2.55 (1902)	650	2.80 (2089)	690	3.10 (2313)	725	3.45 (2574)	760	3.70 (2760)	790	3.95 (2947)	825	4.20 (3133)	860	4.50 (3357)	895	4.80 (3581)	980	5.80 (4327)	1035	6.65 (4961)		
8000 (3780)	620	2.70 (2014)	660	2.95 (2201)	700	3.30 (2462)	735	3.60 (2686)	770	3.85 (2872)	800	4.10 (3059)	830	4.35 (3245)	870	4.65 (3469)	900	4.95 (3693)	985	6.00 (4476)	1040	6.80 (5073)		
8200 (3870)	630	2.85 (2126)	670	3.10 (2313)	710	3.50 (2611)	745	3.75 (2798)	780	4.00 (2984)	810	4.25 (3171)	840	4.50 (3357)	880	4.85 (3618)	910	5.15 (3842)	990	6.20 (4625)	1045	7.00 (5222)		
8400 (3960)	645	3.05 (2275)	680	3.30 (2462)	720	3.65 (2723)	755	3.95 (2947)	790	4.15 (3096)	815	4.40 (3282)	850	4.70 (3506)	885	5.05 (3767)	915	5.30 (3954)	995	6.35 (4737)	1050	7.15 (5334)		
8600 (4060)	655	3.20 (2387)	695	3.45 (2574)	730	3.85 (2872)	765	4.10 (3059)	800	4.35 (3245)	825	4.60 (3432)	860	4.85 (3618)	895	5.25 (3917)	920	5.50 (4103)	1000	6.55 (4886)	1055	7.35 (5483)		
8800 (4150)	670	3.40 (2536)	705	3.65 (2723)	740	4.00 (2984)	775	4.30 (3208)	805	4.50 (3357)	830	4.75 (3544)	865	5.05 (3767)	900	5.40 (4028)	930	5.65 (4215)	1010	6.70 (4498)	1060	7.50 (5595)		
9000 (4250)	680	3.55 (2648)	715	3.80 (2835)	750	4.20 (3133)	785	4.45 (3320)	815	4.65 (3469)	840	4.90 (3655)	875	5.20 (3879)	910	5.60 (4178)	935	5.85 (4364)	1015	6.90 (5147)	----	----		
9200 (4340)	690	3.75 (2798)	725	4.05 (3021)	760	4.40 (3282)	795	4.65 (3469)	825	4.85 (3618)	850	5.15 (3842)	885	5.45 (4066)	920	5.80 (4327)	945	6.05 (4513)	1020	7.15 (5334)	----	----		
9400 (4440)	700	3.95 (2947)	735	4.25 (3171)	770	4.60 (3432)	800	4.85 (3618)	830	5.05 (3767)	860	5.35 (3991)	895	5.65 (4215)	925	6.00 (4476)	950	6.30 (4700)	1030	7.40 (5520)	----	----		
9600 (4530)	715	4.15 (3096)	750	4.50 (3357)	780	4.75 (3544)	810	5.05 (3767)	840	5.30 (3954)	875	5.60 (4178)	905	5.90 (4401)	935	6.25 (4663)	960	6.50 (4849)	----	----	----	----		
9800 (4630)	725	4.35 (3245)	760	4.70 (3506)	785	4.95 (3693)	815	5.25 (3917)	850	5.50 (4103)	885	5.80 (4327)	915	6.10 (4551)	940	6.45 (4812)	965	6.75 (5036)	----	----	----	----		
10,000 (4720)	735	4.55 (3394)	770	4.95 (3693)	795	5.15 (3842)	825	5.45 (4066)	855	5.70 (4252)	895	6.05 (4513)	925	6.35 (4737)	950	6.65 (4961)	975	6.95 (5185)	----	----	----	----		

NOTE — Data is measured external to the unit cabinet with the air filter in place. See Page 49 for Accessory Air Resistance data.

BLOWER DRIVE SELECTION

Using total air volume (cfm or L/s) and system Static Pressure External to Unit (inches water gauge or Pascals) requirements determine from Blower Performance Chart Rpm and motor size required for job. Specify Bhp

or W, exact Rpm and power characteristics required when ordering. The correct motor and pulleys will be factory installed. The following table lists Motor size and Rpm range of drive setups available with each motor.

CHA11-953 AND CHA11-1353

Model No.	Nominal Motor hp (W)	*Rpm Range Of All Available Drive Setups @ 1720 Rpm Motor Speed
CHA11-953	1-1/2 (1119)	805-1023
	3 (2238)	805-1023
		936-1197 (Electric Heat)
CHA11-1353	3 (2238)	677-860
	5 (3730)	896-1079

*Specify exact Bhp (W), Rpm and power characteristics required when ordering.

CHA11-1853 AND CHA11-2753

Model No.	Nominal Motor hp (W)	*Rpm Range Of All Available Drive Setups @ 1720 Rpm Motor Speed
CHA11-1853	5 (3730)	625-780
		815-970
CHA11-2753	5 (3730)	600-760
	7-1/2 (5595)	790-965
		900-1070

*Specify exact Bhp (W), Rpm and power characteristics required when ordering.

CEILING DIFFUSER AIR THROW DATA

CHA11-953 AND CHA11-1353

Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step Down		FD11 Flush	
	cfm	L/s	feet	meters	feet	meters
CHA11-953	3000	1420	27—33	8.2—10.1	25—30	7.6—9.1
	3375	1590	30—37	9.1—11.3	28—34	8.5—10.4
	3750	1770	34—41	10.4—12.5	31—38	9.4—11.6
CHA11-1353	4400	2080	34—42	10.4—12.8	32—40	9.8—12.2
	4950	2340	38—47	11.6—14.3	36—45	11.0—13.7
	5500	2600	43—52	13.1—15.8	40—50	12.2—15.2

*Throw is the horizontal or vertical distance an air stream travels on leaving the outlet of diffuser before the maximum velocity is reduced to 50 ft. (15m) per minute.

CHA11-1853 AND CHA11-2753

Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step Down		FD11 Flush	
	cfm	L/s	feet	meters	feet	meters
CHA11-1853	6000	2830	45—55	13.7—16.8	48—55	14.6—16.8
	6750	3190	47—56	14.3—17.1	50—58	15.2—17.7
	7500	3540	49—58	14.9—17.7	55—66	16.8—20.1
CHA11-2753	8000	3780	39—44	11.9—13.4	53—62	16.2—18.9
	9000	4250	47—56	14.3—17.1	55—64	14.6—19.5
	10,000	4720	49—58	14.9—17.7	57—67	17.4—20.4

*Throw is the horizontal or vertical distance an air stream travels on leaving the outlet of diffuser before the maximum velocity is reduced to 50 ft. (15m) per minute.

BLOWER DATA

POWER EXHAUST FANS PERFORMANCE

CHA11-1853

Air Volume Exhausted		Return Air System Static Pressure	
cfm	L/s	inches water gauge	Pa
5050	2380	0	0
4750	2240	.05	12
4400	2080	.10	25
4100	1930	.15	37
3750	1770	.20	50
3450	1630	.25	62

CHA11-2753

Air Volume Exhausted		Return Air System Static Pressure	
cfm	L/s	inches water gauge	Pa
7050	3830	0	0
6550	3090	.05	12
6100	2880	.10	25
5600	2640	.15	37
5100	2410	.20	50
4600	2170	.25	62

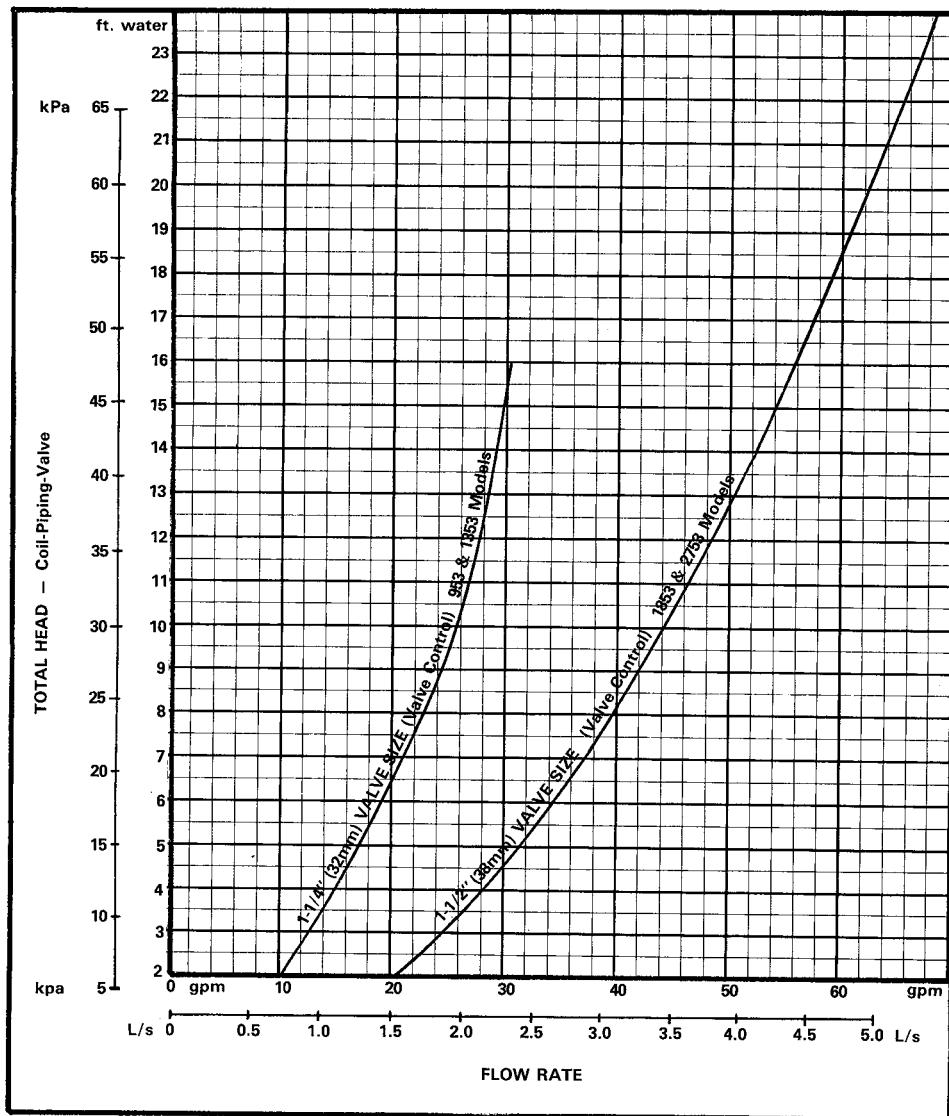
CHA11-953 AND CHA11-1353 ACCESSORY AIR RESISTANCE

Model No.	Air Volume		Total Air Resistance — inches water gauge (Pa)									
			Power Saver	RTD Combination Supply and Return			FD Ceiling Supply & Return	2 Row Hot Water Coil	Electric Heater			
	cfm	L/s		2 Ends Open	2 Ends 1 Side Open	All Ends & Sides Open			15 kW	30 kW	45 kW	60 kW
CHA11-953	2600	1230	.023 (6)	.24 (60)	.21 (52)	.18 (45)	.17 (42)	.36 (90)	.08 (20)	.23 (57)	.39 (97)	.58 (144)
	2800	1320	.025 (6)	.27 (67)	.24 (60)	.21 (52)	.20 (50)	.40 (99)	.09 (22)	.25 (62)	.44 (109)	.64 (159)
	3000	1420	.035 (9)	.32 (80)	.29 (72)	.25 (62)	.25 (62)	.44 (109)	.10 (25)	.28 (70)	.49 (122)	.70 (174)
	3200	1510	.045 (11)	.41 (102)	.37 (92)	.32 (80)	.31 (77)	.48 (119)	.11 (27)	.31 (77)	.54 (134)	.77 (191)
	3400	1600	.055 (14)	.50 (124)	.45 (112)	.39 (97)	.37 (92)	.52 (129)	.12 (30)	.33 (82)	.58 (144)	.84 (209)
	3600	1700	.065 (16)	.61 (152)	.54 (134)	.48 (119)	.44 (109)	.56 (139)	.13 (32)	.35 (87)	.63 (157)	.89 (221)
	3800	1790	.075 (19)	.73 (182)	.63 (157)	.55 (137)	.51 (127)	.60 (149)	.14 (35)	.38 (94)	.68 (169)	.94 (233)
CHA11-1353	3800	1790	.029 (7)	.40 (99)	.32 (80)	.26 (65)	.18 (45)	.37 (92)	.14 (35)	.26 (65)	.45 (111)	.62 (154)
	4000	1890	.037 (9)	.44 (109)	.36 (90)	.29 (72)	.21 (52)	.39 (97)	.15 (37)	.28 (70)	.50 (124)	.69 (172)
	4200	1980	.044 (11)	.49 (122)	.40 (99)	.33 (82)	.24 (60)	.41 (102)	.16 (40)	.30 (75)	.54 (134)	.76 (189)
	4400	2080	.052 (13)	.54 (134)	.44 (109)	.37 (92)	.27 (67)	.45 (112)	.18 (45)	.33 (82)	.59 (147)	.82 (204)
	4600	2170	.059 (15)	.60 (149)	.49 (122)	.42 (104)	.31 (77)	.48 (119)	.20 (50)	.36 (90)	.64 (159)	.89 (221)
	4800	2270	.067 (17)	.65 (162)	.53 (132)	.46 (114)	.35 (87)	.51 (127)	.22 (55)	.39 (97)	.68 (169)	.95 (236)
	5000	2360	.074 (18)	.69 (172)	.58 (144)	.50 (124)	.39 (97)	.54 (134)	.24 (60)	.41 (102)	.72 (179)	1.02 (254)
	5200	2450	.082 (20)	.75 (186)	.62 (154)	.54 (134)	.43 (107)	.56 (139)	.25 (62)	.44 (109)	.77 (191)	1.09 (271)
	5400	2550	.090 (22)	.80 (199)	.68 (169)	.59 (147)	.48 (119)	.59 (147)	.26 (65)	.47 (117)	.82 (204)	1.15 (286)
	5600	2640	.097 (24)	.86 (214)	.72 (179)	.63 (157)	.52 (129)	.62 (154)	.28 (70)	.50 (124)	.86 (214)	1.22 (303)

CHA11-1853 AND CHA11-2753 ACCESSORY AIR RESISTANCE

Model No.	Air Volume		Total Air Resistance — inches water gauge (Pa)						
			Power Saver	RTD Combination Ceiling Supply and Return			FD Ceiling Supply & Return	2 Row Hot Water Coil	Electric Heater All Models
	cfm	L/s		2 Sides Open	3 Sides Open	4 Sides Open			
CHA11-1853	5800	2740	.044 (11)	.70 (174)	.59 (147)	.51 (127)	.39 (97)	.16 (40)	.05 (12)
	6000	2830	.045 (11)	.76 (189)	.63 (157)	.55 (137)	.42 (104)	.17 (42)	.05 (12)
	6200	2930	.047 (12)	.80 (199)	.68 (169)	.59 (147)	.46 (114)	.18 (45)	.05 (12)
	6400	3020	.048 (12)	.86 (214)	.72 (179)	.63 (157)	.50 (124)	.19 (47)	.05 (12)
	6600	3110	.050 (12)	.92 (229)	.77 (191)	.67 (167)	.54 (134)	.20 (50)	.06 (15)
	6800	3210	.052 (13)	.99 (246)	.83 (206)	.72 (179)	.58 (144)	.21 (52)	.06 (15)
	7000	3300	.054 (13)	1.04 (259)	.87 (216)	.76 (189)	.62 (154)	.22 (55)	.06 (15)
	7200	3400	.056 (14)	1.09 (271)	.92 (229)	.80 (199)	.66 (164)	.23 (57)	.06 (15)
	7400	3490	.058 (14)	1.15 (286)	.97 (241)	.84 (209)	.70 (174)	.25 (62)	.06 (15)
CHA11-2753	7600	3590	.038 (9)	.51 (127)	.42 (104)	.37 (92)	.43 (107)	.31 (77)	.07 (17)
	7800	3680	.039 (10)	.55 (137)	.46 (114)	.40 (99)	.47 (117)	.32 (80)	.08 (20)
	8000	3780	.041 (10)	.59 (147)	.49 (122)	.43 (107)	.50 (124)	.33 (82)	.08 (20)
	8200	3870	.043 (11)	.63 (157)	.53 (132)	.46 (114)	.53 (132)	.35 (87)	.08 (20)
	8400	3960	.045 (11)	.67 (167)	.56 (139)	.49 (122)	.56 (139)	.36 (90)	.09 (22)
	8600	4060	.047 (12)	.71 (177)	.60 (149)	.52 (129)	.59 (147)	.37 (92)	.09 (22)
	8800	4150	.048 (12)	.76 (189)	.63 (157)	.55 (137)	.63 (157)	.39 (97)	.10 (25)
	9000	4250	.050 (12)	.79 (196)	.67 (167)	.58 (144)	.66 (164)	.41 (102)	.10 (25)
	9200	4340	.052 (13)	.84 (209)	.70 (174)	.61 (152)	.69 (172)	.42 (104)	.11 (27)
	9400	4440	.054 (13)	.87 (216)	.73 (181)	.64 (159)	.72 (179)	.44 (109)	.11 (27)
	9600	4530	.055 (14)	.92 (229)	.77 (191)	.67 (167)	.75 (186)	.46 (114)	.12 (30)
	9800	4620	.057 (14)	.96 (239)	.81 (201)	.70 (174)	.78 (194)	.48 (119)	.12 (30)
	10,000	4720	.059 (15)	1.00 (249)	.84 (209)	.73 (182)	.81 (201)	.50 (124)	.13 (32)

CHA11-953-1353-1853-2753 HOT WATER COIL PRESSURE DROP

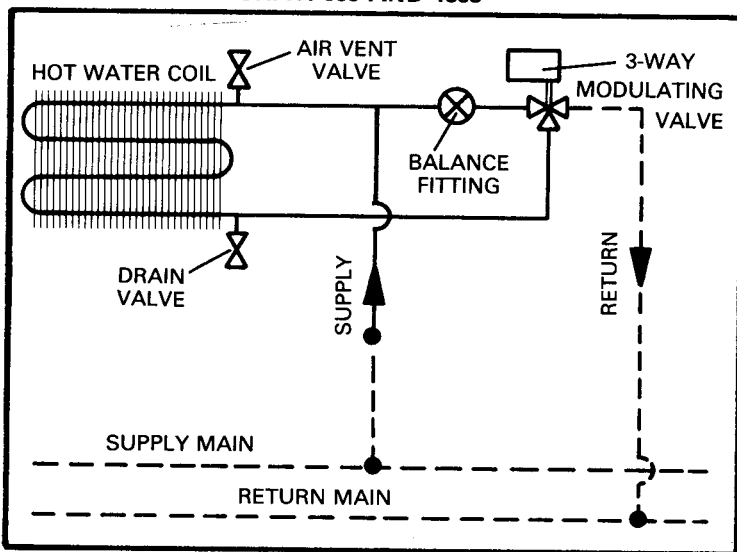


**HOT WATER WITH GLYCOL SOLUTION
PRESSURE DROP CORRECTION FACTOR CHART**
Multiply figure in pressure drop chart by
correction factor below.

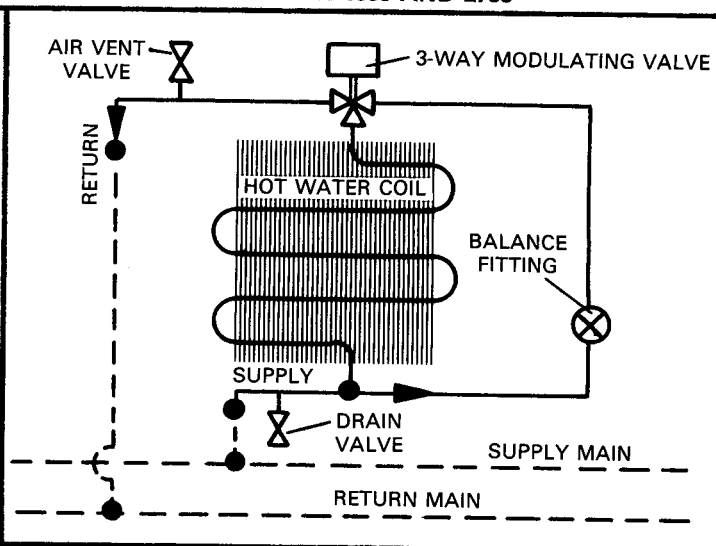
% Glycol	Correction Factor
0	1.00
10	1.07
20	1.14
30	1.22
40	1.31
50	1.40

MODULATING VALVE CONTROL SYSTEM PIPING

CHA11-953 AND 1353

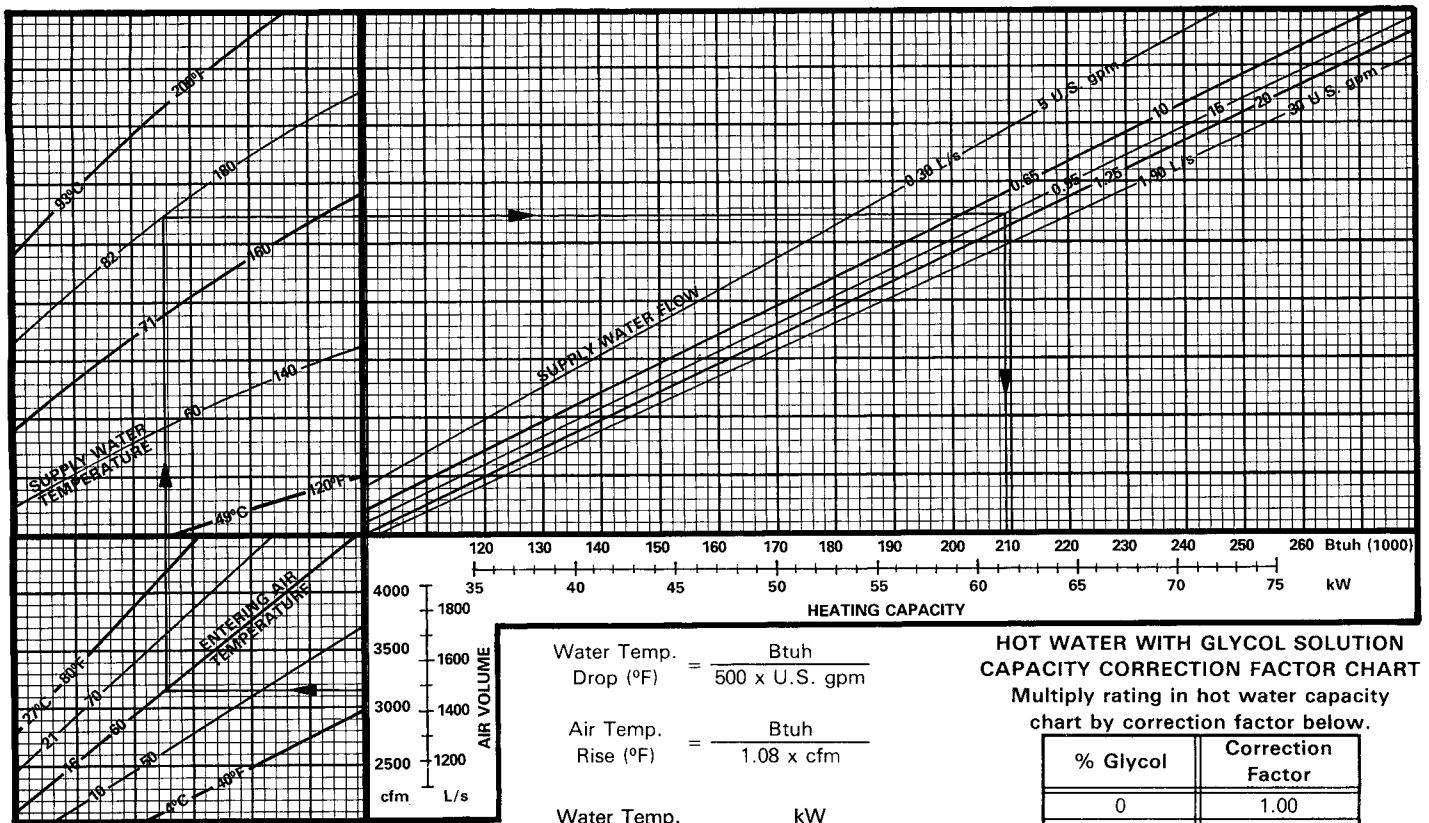


CHA11-1853 AND 2753

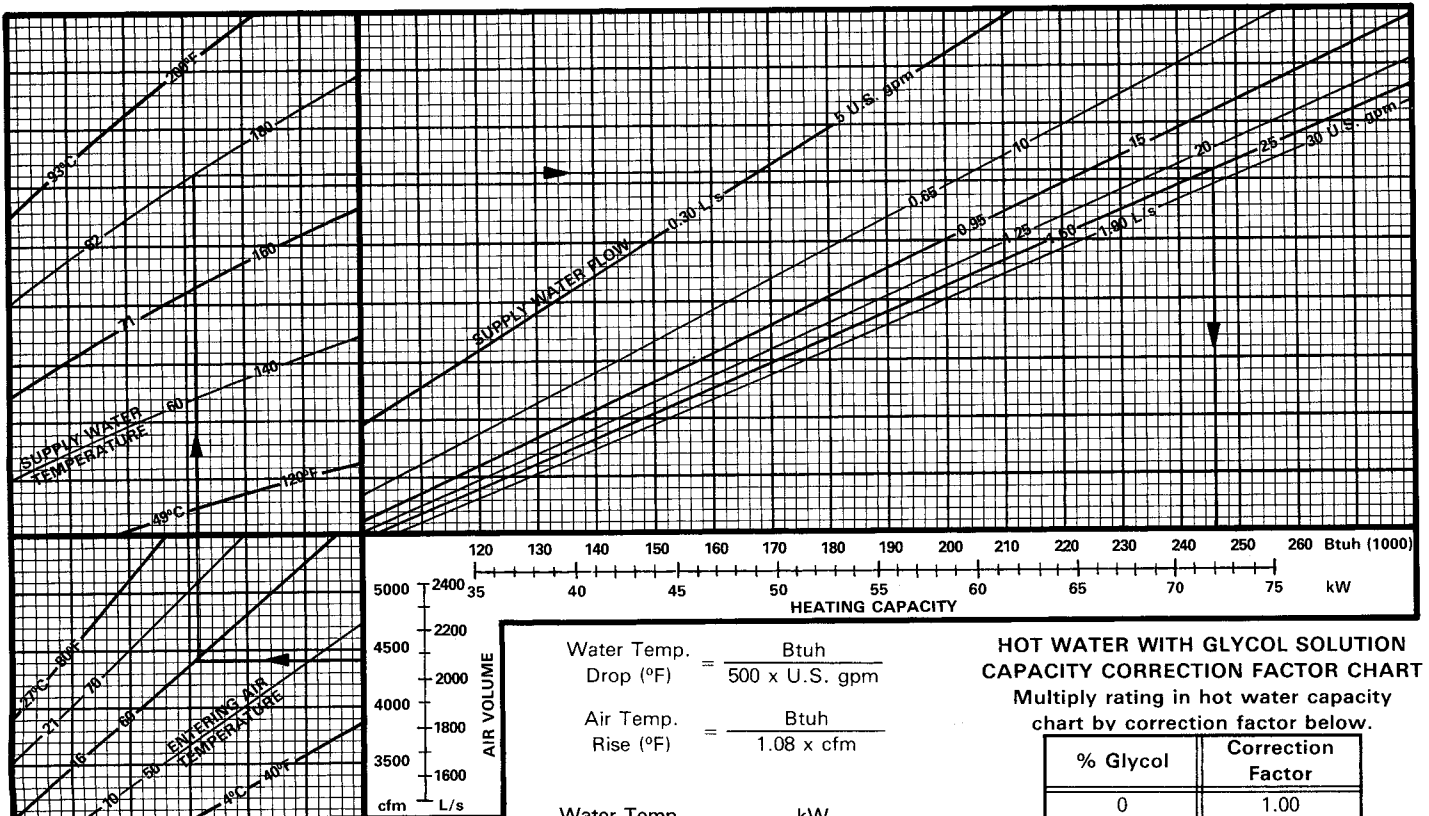


———— PIPING AND CONTROLS FURNISHED
AND FACTORY INSTALLED
----- PIPING FURNISHED BY INSTALLER

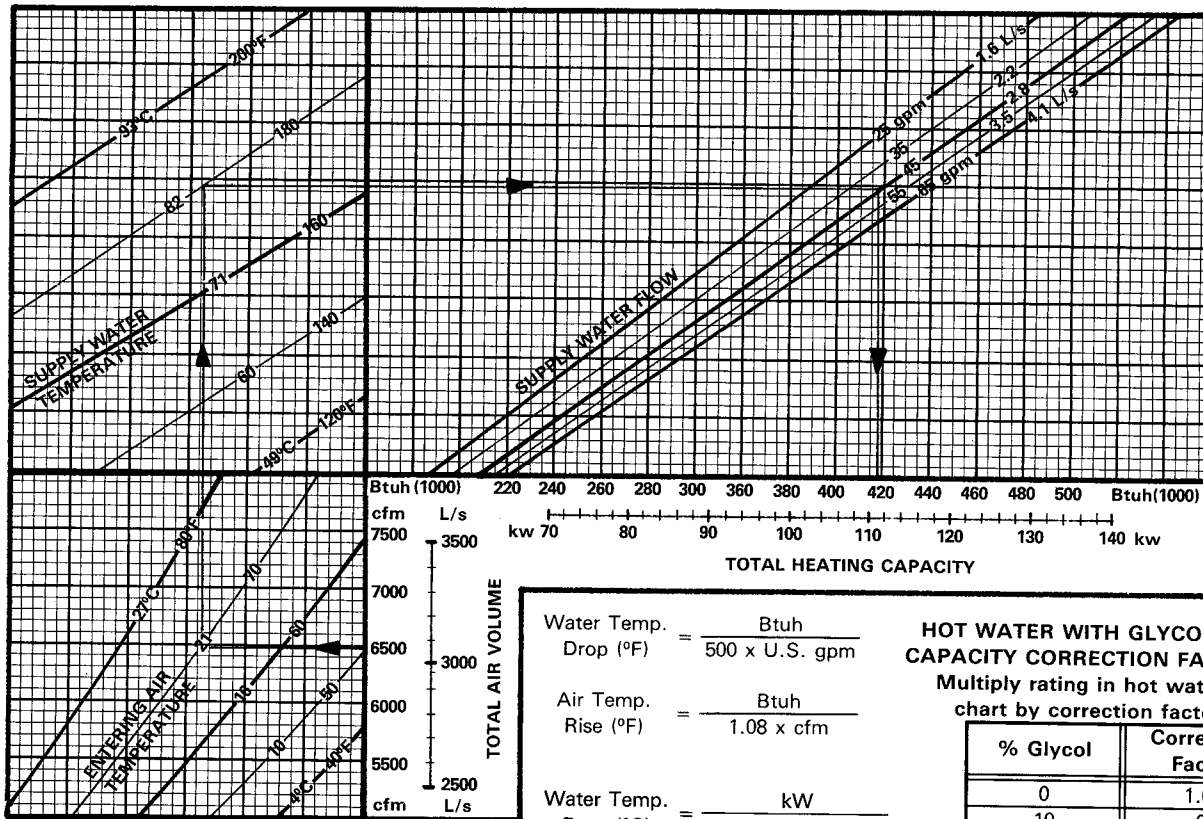
CHA11-953 (HWC11-95) HOT WATER HEATING CAPACITY



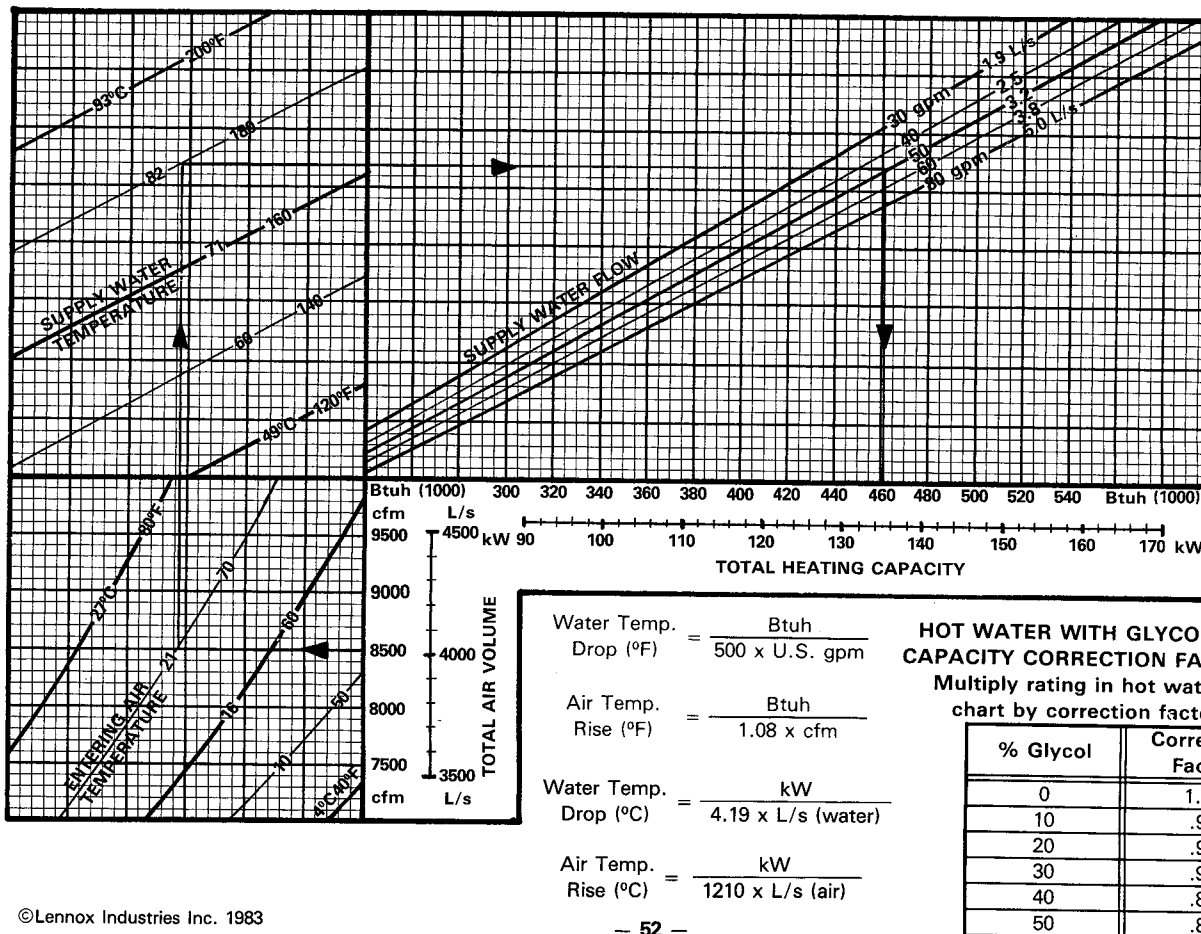
CHA11-1353 (HWC11-135) HOT WATER HEATING CAPACITY



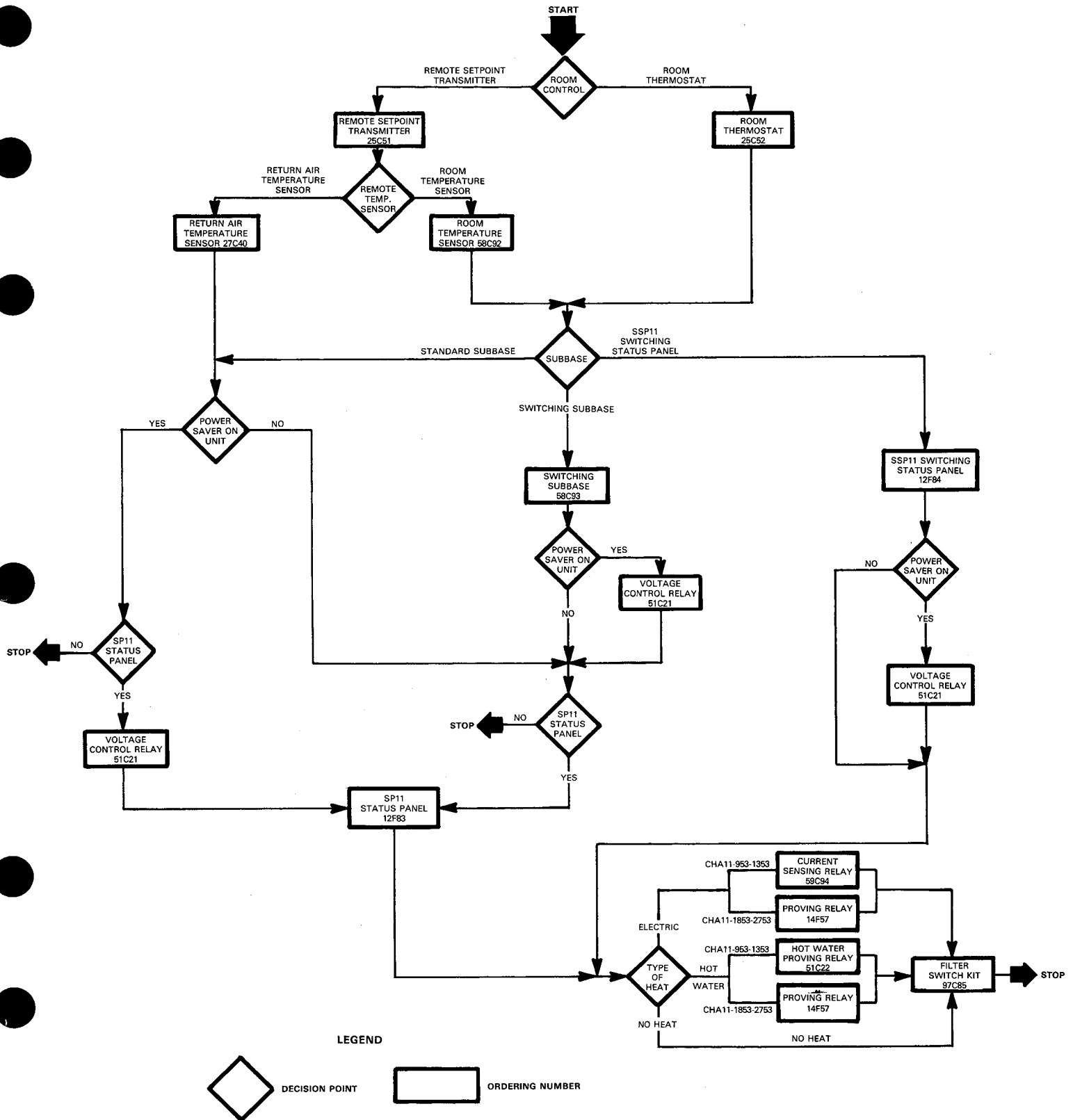
CHA11-1853 (HWC11-185) HOT WATER HEATING CAPACITY



CHA11-2753 (HWC11-275) HOT WATER HEATING CAPACITY



CONTROL SELECTION FLOW CHART



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 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.

Approvals — Single package unit shall be listed by a certified agency. All wiring shall be in compliance with CEC.

Roof Mounting Frame — Furnish and install a steel roof mounting frame for bottom or end 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. 14 inch (356mm) high frame shall be approved by National Roofing Contractors Association.

Air Distribution — Equipment shall be capable of bottom or end handling of conditioned air. All air distribution ducts shall be fiberglass or ga. galvanized steel insulated with inch (mm) thick lb./ft.³ (kg/m³) density fiberglass or equivalent.

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

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

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

The dual compressors shall be internally spring mounted and have positive crankshaft lubrication, discharge muffler, twin internal solid-state temperature sensors, immiscible crankcase heater and overload protection. The refrigeration system shall have suction and discharge line service gauge ports, high pressure switch, low pressure switch, driers and full refrigerant charge. Control option available shall consist of low ambient control. Shall comply with ARI Standard 210 and 360 Test Conditions.

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

Optional electric heaters shall be available. 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.

Hot Water Heat — The certified total heating capacity output shall be Btuh (kW) with a heating coil air volume of cfm (L/s), at water entering temperature of °F (°C) and a flow rate of gpm (L/s) and an entering air temperature of °F (°C). A three way modulating water valve shall be available. The coil shall be non-ferrous construction with aluminum fins mechanically bonded to copper tubes. Factory installed freeze-stat shall provide freeze-up protection. Coil shall be factory pressure leak tested.

Electronic Control System — Shall provide room thermostat, discharge temperature sensor, logic panel, modulating damper actuator and related accessories to automatically operate the mechanical equipment through the heating or cooling and ventilating cycles as required.

Cabinet — Shall be galvanized steel with a baked-on outdoor enamel paint finish. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry. Base shall have drainage holes. Lifting lugs shall be provided for rigging.

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

Supply Air Blower — Centrifugal supply air blower shall have permanently lubricated ball bearings, adjustable belt drive and motor mount where belt tensions can be easily adjusted. The entire assembly shall be floated on resilient rubber mounts. 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.

Condenser Fans — Twin propeller type condenser fans shall discharge vertically and be direct driven by a hp (W) motor. Fan motor shall be equipped with sleeve bearings, permanently lubricated, inherently protected and equipped with rain shield. Fan shall have a safety guard.

Air Filters — 1" (25mm) thick disposable frame type fiberglass media filters shall have not less than sq. ft. (m²) of free area.

POWER SAVER — Furnish and install complete with controls an optional mechanically linked air mixing damper assembly including outdoor air and recirculated air dampers. The assembly shall mount within the confines of the unit cabinet and provide for the introduction of outside air for minimum ventilation and free cooling. Outdoor air hood shall mount external to the unit cabinet. Damper motor shall be 24 volt, modulating spring return. Controls shall include discharge sensor and adjustable enthalpy control.

Power Exhaust Air Dampers — Shall be available on CHA11-1853 and CHA11-2753 models. Direct drive propeller type fans shall exhaust air through pressure relief dampers. Motors shall be overload protected. Pressure operated dampers shall install within the unit and prevent blow back and outdoor air infiltration during the fan off cycle. Damper blades shall ride in nylon bearings and be gasketed for tight seal and quiet operation.

Gravity Exhaust Dampers — Pressure operated dampers shall install within the unit. Damper blades shall ride in nylon bearings and be gasketed for tight seal and quiet operation.

Fresh Air Dampers — Outdoor air damper section shall control outdoor air requirements and be available for manual or automatic operation. Dampers shall be adjustable for air quantities up to 25%. OAD11 models shall include cleanable air filter.

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.

Night Setback Controls — Complete controls shall be available to program the equipment for day-night operation.

Blower Powered Mixing Damper Boxes — Shall be available for zone control system applications. Furnish and install complete with controls and air mixing blower powered unit including conditioned air dampers, recirculated air dampers and direct drive blower(s). Capable of delivering Cfm (L/s) at an external static pressure of inches water gauge (Pa). The blower powered unit shall install in the duct system within the structure.