

LENNOX®

ALL SEASON SINGLE ZONE SYSTEMS

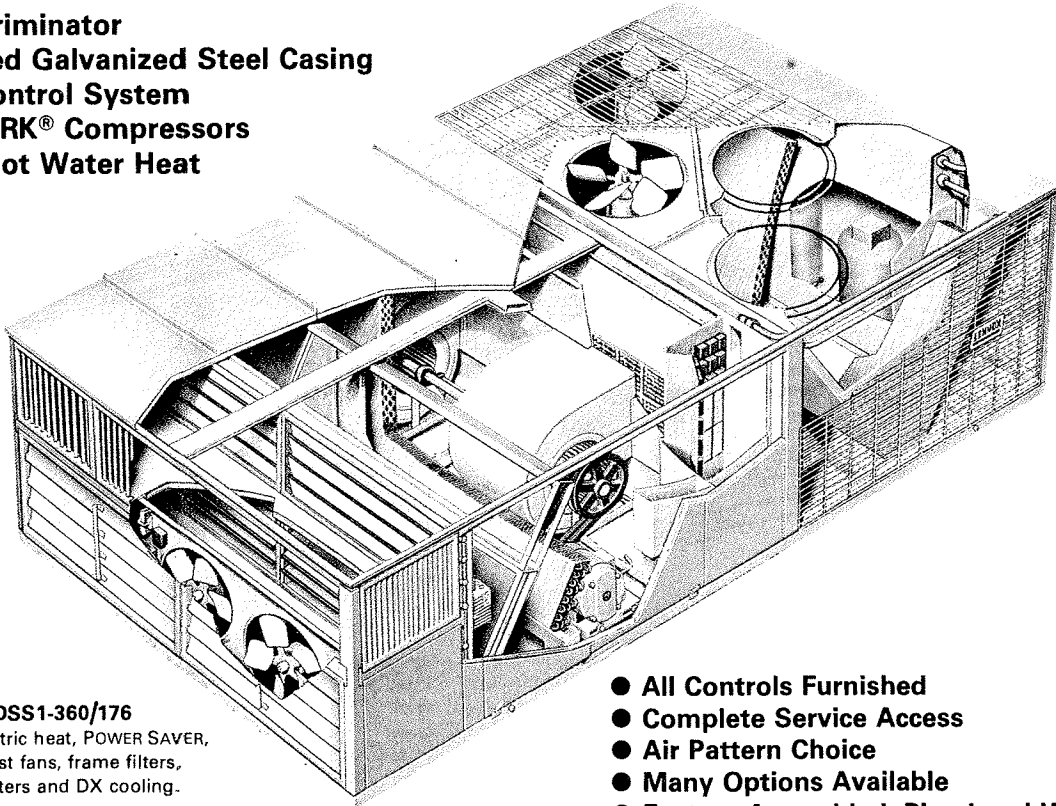
DSS1-300-360-450-600

SINGLE PACKAGE ROOFTOP UNITS — 50 Hz

*80.3 to 145 kW (274 000 to 495 000 Btuh) Cooling Capacity
169.2 kW (577 500 Btuh) Output Optional Gas Heat
28.2 to 180 kW (96 000 to 614 000 Btuh) Optional Electric Heat
161.2 to 249.1 kW (550 000 to 850 000 Btuh) Optional Hot Water Heat

*At ARI Standard 210 Test Conditions

- Latent Load Discriminator
- Outdoor Enameled Galvanized Steel Casing
- Energy Saving Control System
- Lennox LANDMARK® Compressors
- Gas, Electric or Hot Water Heat
- DX Cooling



DSS1-360/176

With electric heat, POWER SAVER, exhaust fans, frame filters, pre-filters and DX cooling.

- All Controls Furnished
- Complete Service Access
- Air Pattern Choice
- Many Options Available
- Factory Assembled, Piped and Wired

Rooftop Single Zone System Provides Application Versatility, Energy Conservation, Maximum Operating Efficiency and Economical Installations

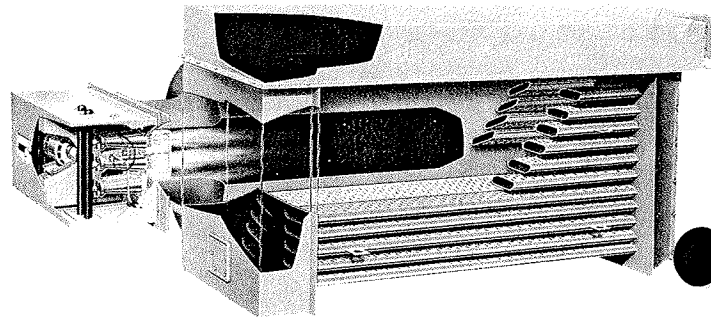
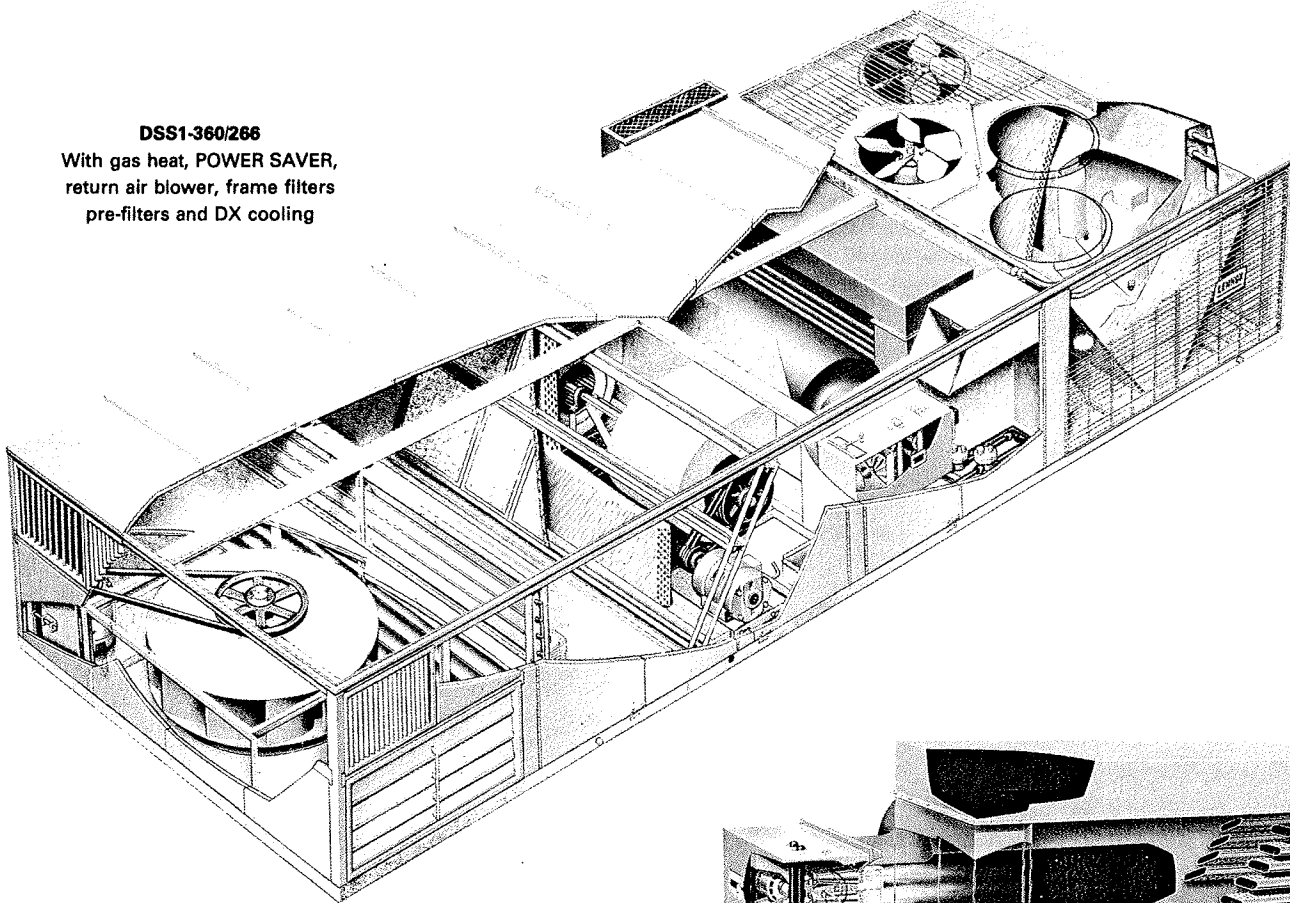
The DSS1 Rooftop Single Zone Unit incorporates a complete Heat-Vent-Cool system (including condensing unit) of highly engineered, integrated components in a weatherproof, low silhouette single package. The DSS1 is the highest quality and most flexible single package commercial rooftop unit on the market. Units are designed for rooftop installation with bottom handling of supply and return air. A separate roof mounting frame (optional) mates to the bottom of the DSS1 unit and when flashed into the roof permits weatherproof duct connection and entry into the structure. Roof mounted equipment saves valuable interior floor space, keeps sound outdoors, provides ease of service access without disturbing occupants of the building and permits easy concealment of ducts in drop ceilings. The most effective energy conservation measures have been utilized in the design of the DSS1 units and include: Enthalpy control providing maximum use of outdoor air for free cooling. Multiple refrigeration circuits for more partial load efficiency. Two-speed compressors for greater first stage efficiency. Latent Load Discriminator^{T.M.} controls latent cooling capacity to reduce operation costs. Refrigerant heat reclaim coil reduces cost up to 50% in supermarket applications. Dehumidification/reheat condenser coil maintains precise humidity control and reduces the use of primary energy for reheat requirements. Supply air blowers operate with minimum resistance, input watts and operating cost. Solid-state electronic control system provides energy conservation operation and superior comfort performance, the year around. The single package units are available with a choice of options including: gas,

electric or hot water heat, DX air conditioning with a complete refrigerant charge, POWER SAVER[®] fresh air control, twin supply air blower drive and motor selection, return air blower or exhaust fans, dehumidification/reheat condenser coil, supermarket reclaim coil, choice of air filtering and roof mounting frames. All necessary controls including a disconnect switch (optional) are factory installed and wired. Units are also available as cooling-ventilating models only (less the heating components) or heating-ventilating only (less the cooling components.) All of these features provide almost unlimited flexibility in application and system design. The DSS1 units make it possible to specify an entire rooftop single zone comfort system, including all equipment and controls, from one manufacturing source. This permits dealing only with Lennox for complete service and parts on the entire system. Lennox is and wants to be totally responsible for all the equipment and also for controls operation when furnished by Lennox. The DX cooling system consists of separate and completely independent refrigeration systems including separate Lennox LANDMARK[®] compressors and their independent condenser with fans and a separate circuit in the single evaporator coil. Equipment is shipped factory assembled. Cooling system has been thoroughly tested and rated at ARI Standard 210 test conditions. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber. Units and components within are bonded for grounding to meet safety standards for servicing required by U.L. and NEC. Each unit is test operated at the factory before shipment, assuring continuity of controls and wiring.

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

DSS1-360/266

With gas heat, POWER SAVER,
return air blower, frame filters
pre-filters and DX cooling



Electronic Lennox Energy Saving System — The solid-state 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 room temperature sensing transmitter (Thermostat), supply air sensor, load analyzer control module with heat-cool logic controls relays plus a spring return mixed air/ventilation damper actuator with infinite resolution for blending outdoor air with return air. This solid-state system will operate the equipment to automatically match its output to the load with minimum space temperature variation. To accomplish this, the room transmitter is continuously comparing space temperature deviation with supply air temperature and sending a varying load signal to the load control module. The heat-cool logic relays in the control module then cycle the mechanical equipment to match the output to the load condition. Also, the system will often balance with a constant supply air temperature that will allow the system to "coast" with only the blowers operating for as long as the balanced condition continues. Should the load requirement change, the controls will immediately respond to match supply air temperature to the load. With this control system troubleshooting is simple because the load analyzer signal transmitted by the room sensing transmitter reflects the load and indicates system performance. The load analyzer signal can be monitored at the room temperature sensing transmitter or the load analyzer control module mounted on the unit.

Electric Heat — Available in 28.2 thru 180 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 support frame by high quality insulators. Time delay relays bring the elements on and off the line in sequence and in response to demand, with a time delay between each element. Safety controls include a discharge air limit control with fixed temperature setting (automatic reset) located in the supply air stream and a secondary limit control with fixed temperature setting (automatic reset) located in the heating section. In addition, heaters provide two stage operation and are equipped with high temperature thermal safety devices providing positive protection in the event of overheating. Optional outdoor air temperature thermostat locks out second stage heat during mild weather, preventing short-cycling and conserving fuel.

Gas Heating (DSS1-300/266 and DSS1-360/266) — Lennox DURATUBE® heat exchanger is available in a choice of stainless steel or DURAGLASS II® coated steel. Heat exchanger design combines corrosion resistance, strength and expansion/contraction characteristics necessary for long service life. Design also results in low resistance to air travel and ease of cleaning. Cylindrical drum combustion chamber and precise sizing and spacing of rectangular secondary heating tubes assures even heat release over the entire heat exchanger. Flame observation port is located at rear of heat exchanger, cabinet panel must be removed for access. Cleaning access is provided through removable access plates at front and rear breechings. Removal of flue products at rear keeps temperatures low in burner and controls compartment and provides additional heating surface area of heat exchanger resulting in maximum heating efficiency. Unique Lennox designed power burner provides efficient, trouble free operation and is unaffected by adverse wind or atmospheric conditions. Two stage burner is constructed of combination stainless and aluminized steel and consists of dual manifold with three individual inshot burners per manifold. All six burners fire when high fire is required while three burners operate for low fire requirements. Pilot flame is lit by automatic spark ignition, pilot burns continuously during main burner operation. Combustion air blower air pressure safety switch assures operation of combustion blower during entire burner operation. Radial blade type blower wheel requires minimum service for cleaning. Burner is equipped with inspection window for viewing burner during operation and air shutter to regulate combustion air for combustion blower. Controls furnished include: separate automatic valves for low and high fire operation, gas pressure regulation, pilot solenoid valve, manual shutoff valves on main and pilot lines. In addition, limit controls and electronic flame proving and sensing controls are furnished for safe and reliable operation. Outdoor air temperature thermostat locks out second stage heat during mild weather, preventing short-cycling and conserving fuel. Controls are furnished for safe and reliable operation. All controls are factory installed, piped, wired, tested and rated for operation down to minus 40°C (minus 40°F) outdoor air temperature.

Hot Water Heat — A factory installed hot water coil can be furnished with coil only (less controls) and with or without a three-way modulating valve. A factory installed freeze stat terminates power to damper actuator closing outside air dampers, activates valve and starts pump 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 is constructed of precisely spaced ripple-edged aluminum fins machine fitted to copper tubes. Each joint is silver soldered and coil is thoroughly tested under pressure to insure leak proof construction.

Evaporator And Condenser Coils — Lennox designed and fabricated coils are constructed of precisely spaced ripple-edged aluminum fins machine fitted to copper tubes for maximum strength and excellent heat transfer. Each joint is silver soldered and coil is thoroughly tested under pressure to insure leak proof construction. The separate circuits of the evaporator coil are face split. Each circuit has its own independent expansion valve, separate condensing section and complete refrigerant charge. Evaporator coil drain pan is constructed of corrosion resistant heavy gauge galvanized steel. Equipped with two galvanized pipe drain outlets.

Optional Dehumidification/Reheat Condenser Coil — Reheat coil, factory installed downstream from the evaporator coil, utilizes condenser heat to maintain humidity control without overcooling. Dehumidistat (adjustable setting), located in the return air stream, senses relative humidity level and activates refrigerant system when relative humidity exceeds dehumidistat setting.

Optional Low Ambient Controls — System will operate satisfactorily down to 2°C (35°F) outdoor air temperature without any additional controls. For units, less the POWER SAVER, where operation below 2°C (35°F) is required factory installed low ambient controls can be added enabling the unit to operate down to minus 18°C (0°F).

Optional Hot Gas By-Pass Controls — Factory installed. A portion of the compressor discharge gas is by-passed directly into the refrigerant distributor, maintaining full refrigerant flow and compressor cooling. In addition, it provides another stage for capacity reduction.

DX Cooling System — Complete factory sealed refrigeration system consists of compressors, condenser coils and direct drive fans, evaporator coil and twin blowers, expansion valves, service valves, safety controls, refrigerant lines connected and a full operating charge of refrigerant. Lennox LANDMARK compressors and their independent refrigerant circuits, condensers and fans gives staging control to fit varying cooling load requirements.

Dependable Lennox LANDMARK Compressors — DSS1-300-360 units are available with a choice of one L6 two speed compressor and one single speed L2 compressor or two L2 single speed compressors. DSS1-450 model is equipped with three L2 single speed compressors. The DSS1-600 has a choice of two L6 two speed compressors and one L2 single speed compressor or three L2 single speed compressors. The large casing, spring loaded discharge valve, high suction intake ports and crankcase heater result in effective "slugging" protection. Crankshaft is statically and dynamically balanced and has patented 3 mode oil pumping for positive pressure lubrication. Contoured piston for increased volumetric efficiency. Strategically located discharge mufflers result in extremely quiet operation. Motor is located within refrigerant flow pattern resulting in low motor winding temperatures. Twin internally mounted motor inwinding temperature sensing thermostats provide safe operation. In addition, a low ambient sensor prevents compressor operation below minus 6°C (22°F). High and low pressure controls (automatic reset) and solid-state overload protector (L6 only) are furnished in the compressor terminal box. The entire running gear assembly is spring mounted with the sealed can. L6 two speed operation increases unloading efficiency, extends service life of the compressor, and provides operation economy during periods of reduced loads. The L6 operates at 1500 rev/min at low speed and 3000 rev/min at high speed. A positive interlock between speeds prevents both speeds from being energized simultaneously.

Optional Latent Load Discriminator — Available on models equipped with the L6 two speed compressor. Latent Load Discriminator control is made possible with the use of the Lennox L6 two speed compressor for the first stage cooling circuit and a dehumidistat (factory installed) to sense relative humidity. The sensible capacity of an air conditioning system is used to control air temperature in the conditioned space. Current systems produce both sensible and latent capacity under most operating situations. In many cases the latent capacity is in excess of that required to maintain comfort conditions. By controlling the DSS1 latent capacity, energy is saved when the need for dehumidification decreases. This is accomplished with the L6 two speed compressor. By regulating the compressor staging and evaporator coil surface, latent capacity control is achieved. The Latent Load Discriminator allows latent capacity manipulation without loss of comfort conditions and saves energy.

Condenser Section — Four direct drive fans draw large air volumes uniformly through the large dual condenser coils resulting in high refrigerant cooling capacity. The condenser coils are furnished in a V-shaped configuration for maximum cooling surface area. Condenser air enters through grilles on both sides of the unit and is discharged out the top. Fans are resiliently mounted. Motors are overload protected and equipped with a moisture protection shield. Compressors are mounted on resilient rubber mounts in a separate enclosed compartment, isolating them from the weather. Control box is conveniently located for service access with all controls factory installed and wired. A condenser fan guard is furnished.

Thermostat Choice — A solid-state celsius room temperature sensing transmitter (thermostat) and a wall plate adapter for mounting to a standard electrical box is available. A wide "no load" band solid-state room temperature sensing transmitter (thermostat) is also available as a specified option for use with automatic heat-to-cool changeover. The wide "no load" transmitter has integral differential of approximately 3.3°C (6°F) between the room temperature that creates a demand for heating and that which causes the load analyzer control module to initiate mechanical refrigeration cooling. The reverse procedures occur in a change from a cooling requirement to one for heating. Both transmitters are available with concealed set point and locking screw cover. In addition, Auto-Off or Heat-Off-Cool switching options are available.

Powerful Supply Air Blowers — Twin centrifugal blowers mounted on a single shaft deliver large air volumes with low power consumption. The blower assemblies are mounted to a rugged angle iron frame with the entire blower and frame assembly vibration isolated on rubber mounts. Ball bearings are permanently sealed and lubricated. Blower wheels are statically and dynamically balanced. Design of motor mounting base permits quick and simple belt tension adjustment or belt changing. A choice of motor output and drives is available. Motors are overload protected. Air velocity activated blower (sail) switch, installed in blower scroll, prevents operation of the heating section in the event of supply air blower failure.

Return Air Blower — Available in 5817mm (229 in.) and 6756mm (266 in.) frame lengths only. Exhausts air in direct proportion to the amount of outdoor air being introduced into the system. It can exhaust 100% of the total supply air handled. It also overcomes resistance in the return air system. Return air blower is interlocked to run whenever the supply air blowers are operating with the exception of situations related to smoke detection applications. Blower assembly is mounted to a rugged angle iron frame with the entire blower assembly and frame vibration isolated on spring mounts. Equipped with permanently lubricated ball bearings. Motor mount design provides simple and quick belt adjustment or changing. A choice of motor output and drives are available. Motors are overload protected.

Exhaust Fans — Direct drive exhaust fans provide system pressure relief. Fans are interlocked to run when the return air dampers are closed and the supply air blowers are operating. Motors are overload protected.

Exhaust Dampers — Pressure operated extruded aluminum dampers ride in nylon bearings. Damper blades are equipped with seal gaskets resulting in tight seal and quiet operation. Damper blades prevent blow-back during off cycle.

Outdoor Air Dampers (Manual) — Units are available with outdoor air dampers only, with the dampers linked for manual operation. Dampers may be adjusted and locked to provide up to 25% fixed minimum outdoor air.

Outdoor Air Intake — Outdoor air enters through corrosion resistant grilles designed to minimize moisture entry. An eliminator section traps rain and keeps it from entering the air handling sections. The trapped moisture is eliminated through drainage outlets in the base section.

POWER SAVER Solid-State Controls — Optional equipment controls fresh air entry and "Free Cooling" with outdoor air. Mechanically linked outdoor and return air dampers are provided with seal gaskets for tight seal and quiet operation. The formed dampers ride in nylon bearings. The positioning of these dampers is accomplished by a spring return damper actuator with infinite resolution. Room sensing transmitter, morning warm-up control located in the return air stream and enthalpy control located in the outdoor air stream regulate damper operation. The enthalpy control senses the total heat content of the outdoor air. This unique control prevents load from entering the unit and yet permits cool dry air capable of cooling to enter, thus taking full advantage of free outdoor air for cooling. Damper actuator and controls are factory wired and installed. An optional remote minimum fresh air control is available. Control installed in the conditioned space will allow manual adjustment of the fresh air intake to meet fresh air code requirements or to introduce fresh air at will.

Weatherproof Casing — Rugged cabinet construction provides maximum strength, resistance to stress and complete protection from the weather. Entire cabinet and base section is constructed of heavy gauge galvanized steel. All exterior panels have a durable finish of outdoor enamel. A five station wash metal preparation assures a perfect bonding surface for the finish coat of baked-on enamel. The side and access panels consists of a outer panel (painted) and inner panel snap locked and riveted together and separated by 76mm (3 inch) thick 8 kg/m³ (1/2 lb/ft³) density fiberglass insulation compressed to 51mm (2 inch) thickness. In addition, the base is insulated with 13mm (1/2 inch) thick 96 kg/m³ (6 lb/ft³) fiberglass insulation and the top panels with 76mm (3 inch) thick 8 kg/m³ (1/2 lb/ft³) density fiberglass insulation. All service access panels are hinged and equipped with locking type door latches. Base rails serve as a galvanized drain pan which traps and drains out any moisture entering the unit. Hoisting lugs are provided in the base for rigging.

Roof Mounting Frame — Exactly fits the perimeter of the DSS1 unit. It is flashed into the roof and mates to the DSS1 base section where the base insulation completes the sealing and weatherproofing job. A nailer strip is secured to the frame sides to facilitate flashing.

FRAME OPTIONS:

- 1 — Standard frame 356mm (14 in.) high and approved by the National Roofing Contractors Association. Model number RMF1-17614 4470mm (176 in.) long, RMF1-22914 5817mm (229 in.) long or RMF1-26614 6756mm (266 in.) long for DSS1-300-360 models. Model number RMF2-26614 6756mm (266 in.) long for DSS1-450-600 units.
- 2 — AF8-300 combustible adaptor frame is used with gas heat units where the RMF1 roof mounting frame is installed on combustible material. The adaptor frame isolates the warm air plenum from combustible material.
- 3 — DSS1-300-360 Models. Frame 610mm (24 in.) high for combination supply and return air distribution system. Model number RMFSR1-17624 4470mm (176 in.) long, RMFSR1-22924 5817mm (229 in.) long or RMFSR1-26624 6756mm (266 in.) long. The roof mounting frame only is available from Lennox. The supply and return air duct and ceiling diffuser must be furnished by the installer. Sheet metal duct lined with fiberglass insulation or fiberglass duct may be used for connection to the diffuser.
- 4 — DSS1-300-360 Models. Horizontal discharge adaptor frame 610mm (24 in.) high. Adapts to the standard RMF1 frame for horizontal supply and return air applications. Model number AFHD1-17624 4470mm (176 in.) long, AFHD1-22924 5817mm (229 in.) long or AFHD1-26624 6756mm (266 in.) long. In addition, a horizontal discharge adaptor kit (RMFHDAK) is required and must be ordered extra. Kit modifies the standard RMF1 frame for usage with the horizontal adaptor frame.

Frames are shipped knocked down and are easily field assembled. See frame dimension drawings and installation detail sketch.

FILTER OPTIONS

Standard Frame Filters — Available with a choice of 51mm (2 in.) thick throwaway frame fiberglass media filters, 51mm (2 in.) thick permanent steel frames with throwaway fiberglass media pads or washable aluminum frame filters with multilayered expanded aluminum mesh media coated with a water soluble adhesive with a high dust holding capacity. Use RP products coating no. 418 (P-8-5069) for reoiling. Filter rack is designed to hold optional 25mm (1 in.) thick prefilters for additional air filtering efficiency. Sliding tracks in filter rack permits ease of removal and replacement for service.

Bag Filters — Highly efficient bag filters are available with units in 5817mm (229 in.) and 6756mm (266 in.) frame lengths only. Filters are readily accessible for servicing. Frame pre-filters may also be used to extend the service life of the bag filters.

Frame Pre-filters — Aluminum frame type 25mm (1 in.) thick air filters with washable, vacuum cleanable polyurethane filter media coated with oil for increased efficiency. Use RP products filter coating No. 418 (P-8-5069) for reoiling. Easily accessible for cleaning. Available with standard frame filters and bag filters.

Optional Night Setback Controls — Equipment is factory wired for night setback operation. In mild climates a choice of a manual system switch or automatic programming is available as options to turn off the entire unit. For colder climates the system room transmitter (thermostat) controls both day and night operation. An additional thermostat is not required. Manual (BM-4762) or 12 hour timer (BM-4761) field installed night setback kits are available to override existing night setback controls. The switch or timer is mounted on a stainless steel plate which fits two standard electrical outlet boxes located in the wall. An optional 7 day clock timer P-8-9608 (with carryover) factory installed in the DSS1 programs the equipment, or the unit may be controlled by a remote time clock.

Optional Remote Readout Panel — Remote Readout Control Panel (BM2-5358) and Rough-In Box (BM1-5358) are available for all applications. From one central location within the structure the operation of the DSS1 may be checked at a glance. Signal lights indicate: System On, Combustion Lockout, Condensing Unit Inoperative and Dirty Filter. See bulletin in Accessories Section. Factory installed night setback controls are available and must be specified when ordering.

Optional Smoke Detector Controls — The photo cell smoke detectors are designed to detect the presence of smoke within the system and to actuate the blower motor controls and other devices to: (1) Shut off the entire system or (2) Shut down supply blower, close outside air and return air dampers and run return air blower or exhaust fans. Terminals are also available for connection of remote alarm circuits. Actuation occurs when smoke within the unit exceeds a density that is sufficient to obscure light by a factor of 2 to 4% per 0.3m (1 ft.). A key switch is provided for periodic test. Two detectors (P-8-11081) are provided. One is located in the return air section and one in the blower section downstream from the air filters. In addition, a remote test/reset control (P-8-11082 — one for each detector) may be provided which acts as a remote test station.

Firestats (Fire Protection Thermostats) — Furnished as standard equipment. Firestats (manual reset) mounted in the return air and supply air stream shut off the unit completely when either firestat detects excessive air temperatures. (Firestats are not furnished when optional smoke detector controls are specified with unit.)

SPECIFICATIONS AND RATINGS

Model No.			DSS1-300/176 DSS1-300/229 DSS1-300/266	DSS1-360/176 DSS1-360/229 DSS1-360/266	DSS1-450/266	DSS1-600/266	
Cooling Capacity	*At ARI Standard 210 Test Conditions	Total Capacity — kW (Btuh)	80.3 (274 000)	90.3 (308 000)	116.0 (396 000)	145.0 (495 000)	
		Sensible Total Ratio	0.81	0.80	0.73	0.72	
		Compressor Input (kW)	25.7	29.6	34.0	47.6	
Condenser Coils	Net face area — m ² (sq. ft.)		4.59 (49.4)	4.59 (49.4)	7.30 (78.6)	7.30 (78.6)	
	Tube diameter — mm (in.) & No. of rows		10 (3/8) — 3	10 (3/8) — 3	10 (3/8) — 4	10 (3/8) — 4	
	Fin spacing — mm (fins per inch)		1.4 (18)	1.4 (18)	1.4 (18)	1.4 (18)	
Condenser Fans (4)	Diameter — mm (in.) & No. of blades		660 (26) — 5	660 (26) — 5	660 (26) — 5	660 (26) — 5	
	Total air volume — m ³ /s (cfm)		9.7 (20 650)	9.7 (20 650)	11.8 (25 000)	11.8 (25 000)	
	Motor output — kW (horsepower)		0.75 (1)	0.75 (1)	0.75 (1)	0.75 (1)	
	Motor input — Watts (total)		3540	3540	4500	4500	
Evaporator Coil	Net face area — m ² (sq. ft.)		2.41 (25.9)	2.41 (25.9)	3.61 (38.9)	3.61 (38.9)	
	Tube diameter — mm (in.) & No. of rows		10 (3/8) — 4	10 (3/8) — 4	13 (1/2) — 4	13 (1/2) — 4	
	Fin spacing — mm (fins per inch)		1.7 (15)	1.6 (16)	1.7 (15)	2.5 (10)	
Dehumidification/ Reheat Condenser Coil	Reheat capacity — kW (Btuh)		19.0 (65 000)	22.6 (77 000)	16.7 (57 000)	22.6 (77 000)	
	Net face area — m ² (sq. ft.)		2.14 (23.0)	2.14 (23.0)	3.42 (36.8)	3.42 (36.8)	
	Tube diameter — mm (in.) & No. of rows		10 (3/8) — 2	10 (3/8) — 2	10 (3/8) — 1	10 (3/8) — 1	
	Fin spacing — mm (fins per inch)		1.6 (16)	1.6 (16)	1.6 (16)	1.6 (16)	
Heating Options	Gas Piping Connections Male Pipe Thread — mm (in.)		32 (1-1/4)		-----		
	**Natural Gas Heating Capacities	Low Input/Output	kW	112.8/84.6		-----	
			Btuh	385 000/288 750		-----	
		High Input/Output	kW	225.7/169.2		-----	
			Btuh	770 000/577 500		-----	
	†Electric Heating Capacity Range kW (Btuh)	3 elements		28.2/33.8 (96 000/115 000)		28.2/33.8 (96 000/115 000)	
		4 elements		37.6/45.0 (128 000/154 000)		37.6/45.0 (128 000/154 000)	
		5 elements		47.0/56.3 (160 000/192 000)		47.0/56.3 (160 000/192 000)	
		6 elements		56.4/67.5 (192 000/230 000)		56.4/67.5 (192 000/230 000)	
		7 elements		65.8/78.8 (225 000/269 000)		65.8/78.8 (225 000/269 000)	
		8 elements		75.2/90.0 (257 000/307 000)		75.2/90.0 (257 000/307 000)	
		9 elements		84.6/101.3 (289 000/346 000)		84.6/101.3 (289 000/346 000)	
		10 elements		94.0/112.5 (321 000/384 000)		94.0/112.5 (321 000/384 000)	
		11 elements		-----		103.4/123.8 (353 000/422 000)	
		12 elements		-----		112.8/135.0 (385 000/461 000)	
		13 elements		-----		122.2/146.3 (417 000/499 000)	
14 elements		-----		131.6/157.5 (449 000/537 000)			
15 elements		-----		141.0/168.8 (481 000/576 000)			
16 elements		-----		150.4/180.0 (513 000/614 000)			
††Hot Water heating capacity — kW (Btuh)		161.2 (550 000) 173.0 (590 000)		219.8 (750 000) 249.1 (850 000)			
Hot Water Coil	Net face area — m ² (sq. ft.)		1.45 (15.6)		1.70 (18.3)		
	Tube diameter — mm (in.) & No. of rows		13 (1/2) — 2		13 (1/2) — 2		
	Fin spacing — mm (fins per inch)		1.7 (15)		1.7 (15)		
	Water line connections (inlet/outlet)		See Valve Selection Curves		See Valve Selection Curves		
Supply Air Blowers (2)	Blower wheel nom. diam. x width — mm (in.)		457 x 330 (18 x 13)		508 x 381 (20 x 15)		
	Motor output Min/Max — kW (horsepower)		2.2 — 7.5 (3-10) 3.7 — 11.2 (5-15)		3.7 - 14.9 (5-20) 5.6 - 18.6 (7½-25)		
	Air volume range — m ³ /s (cfm)		2.8 — 5.7 (6000 — 12 000)		4.7 — 8.5 (10 000 — 18 000)		
Return Air Blower	Wheel diam. — mm (in.) backward curved blades		838 (33)		927 (36.5)		
	Motor output Min/Max — kW (horsepower)		1.1 — 3.7 (1.5 - 5) 2.2 — 3.7 (3 - 5)		2.2 — 5.6 (3 — 7½)		
	Air Volume range — m ³ /s (cfm)		2.8 — 5.7 (6000 — 12 000)		4.7 — 8.5 (10 000 — 18 000)		
Exhaust Fans (3)	Diameter — mm (in.) & No. of blades		559 (22) — 5		610 (24) — 5		
	Total air volume — m ³ /s (cfm)		4.44 (9 400)		6.6 (14 000)		
	Motor output kW (horsepower)		0.56 (3/4)		0.75 (1)		
	Motor input — Watts (total)		1800		2875		
Filter Options	Standard frame filters No. and size	mm	(2) 508 x 508 x 51 (4) 508x635x51 — (3) 406x635x57		(4) 508 x 635 x 51 (9) 406 x 635 x 51		
		in.	(2) 20 x 20 x 2 (4) 20 x 20 x 2 — (3) 16 x 25 x 2		(4) 20 x 25 x 2 (9) 16 x 25 x 2		
	Frame Pre-filters No. and size	mm	(2) 508 x 508 x 25 (4) 508x635x25 — (3) 406x635x25		(4) 508 x 635 x 25 (9) 406 x 635 x 25		
		in.	(2) 20 x 20 x 1 (4) 20 x 25 x 1 — (3) 16 x 25 x 1		(4) 20 x 25 x 1 (9) 16 x 25 x 1		
	†††Bag filters No. and size	mm	(4) 508 x 508 x 838 (3)610x610x661 — (1)305x610x661		(6) 610 x 610 x 661 (2)305x610x661 — (4)508x508x838		
		in.	(4) 20 x 20 x 33 (3) 24x24x26 — (1) 12 x 24 x 26		(6) 24 x 24 x 26 (2) 12 x 24 x 26 — (4) 20 x 20 x 3?		
Frame Options	Roof mounting frame		RMF1 - (17614) - (22914) - (26614)		RMF2-26614		
	Ceiling supply & return mounting frame		RMFSR1-(17624)-(22924)-(26624)		-----		
	Horizontal discharge adapter frame		AFHD1 - (17624) - (22924) - (26624)		-----		
	Horizontal discharge adapter kit		RMFHDAK		-----		
Combustible adapter frame		AF8-300		-----			
Heat section condensate drain — Male Pipe Thread — mm (in.)			(2) — 13 (1/2)		(2) — 13 (1/2)		
Evaporator condensate drain — Female Pipe Thread — mm (in.)			32 (1-1/4)		32 (1-1/4)		

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

**Available with DSS1-300/266 and DSS1-360/266 only.

†See Electric Heat Rating Table for capacities at various voltages.

††Rated at 82°C (180°F) supply water temperature, 21°C (70°F) entering air temperature, 11°C (20°F) water temperature drop and 60 Liter/s (maximum) air volume per kW of cooling capacity (450 cfm per ton). See hot water capacity curves for heating capacities at other conditions.

†††Not available with DSS1-300/176 and DSS1-360/176 models.

ELECTRICAL DATA ELECTRIC HEAT RATINGS

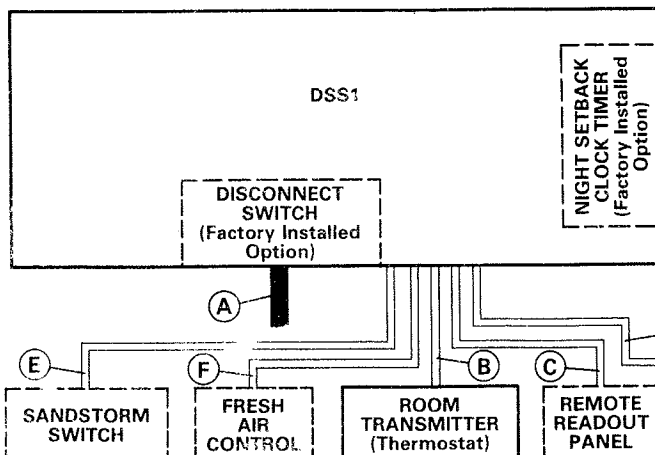
Model No.	No. of Elements	No. of Steps	Volts Input					
			380		400		415	
			kW	Btuh	kW	Btuh	kW	Btuh
DSS1-300 DSS1-360 DSS1-450 DSS1-600	3	3	28.2	96 000	31.2	106 000	33.8	115 000
	4	3	37.6	128 000	41.7	142 000	45.0	154 000
	5	3	47.0	160 000	52.1	178 000	56.3	192 000
	6	3	56.4	192 000	62.5	213 000	67.5	230 000
	7	4	65.8	225 000	72.9	249 000	78.8	269 000
	8	4	75.2	257 000	83.3	284 000	90.0	307 000
	9	5	84.6	289 000	93.8	320 000	101.3	346 000
DSS1-450 DSS1-600	10	5	94.0	321 000	104.2	356 000	112.5	384 000
	11	6	103.4	353 000	114.6	391 000	123.8	422 000
	12	6	112.8	385 000	125.0	427 000	135.0	461 000
	13	7	122.2	417 000	135.4	462 000	146.3	499 000
	14	7	131.6	449 000	145.8	497 000	157.5	537 000
	15	8	141.0	481 000	156.2	533 000	168.8	576 000
	16	8	150.4	513 000	166.7	569 000	180.0	614 000

DX COOLING AND ELECTRIC HEAT

Model No.		DSS1-300	DSS1-360	DSS1-450	DSS1-600
Line voltage (50 HZ — 3 phase)		380/420	380/420	380/420	380-420
Voltage range (minimum — maximum)		342 — 462	342 — 462	342 — 462	342 — 462
Compressor 1	Rated load amps	28.4	28.4	19.0	28.4
	Locked rotor amps	179.0	179.0	105.0	179.0
Compressor 2	Rated load amps	13.2	19.0	19.0	28.4
	Locked rotor amps	80.0	105.0	105.0	179.0
Compressor 3	Rated load amps	----	----	19.0	19.0
	Locked rotor amps	----	----	105.0	105.0
Condenser Fan Motors	Full load amps	(4) — 2.2	(4) — 2.2	(4) — 2.2	(4) — 2.2
	Locked rotor amps	(4) — 10.8	(4) — 10.8	(4) — 10.8	(4) — 10.8
Supply Air Blower Motor	2.2 kW (3 hp)	Full load amps	5.0	----	----
		Locked rotor amps	28.0	----	----
	3.7 kW (5 hp)	Full load amps	7.8	7.8	7.8
		Locked rotor amps	50.0	50.0	50.0
	5.6 kW (7½ hp)	Full load amps	11.8	11.8	11.8
		Lock rotor amps	79.5	79.5	79.5
	7.5 kW (10 hp)	Full load amps	15.2	15.2	15.2
		Locked rotor amps	102.0	102.0	102.0
	11.2 kW (15 hp)	Full load amps	----	21.5	21.5
		Locked rotor amps	----	146.5	146.5
	14.9 kW (20 hp)	Full load amps	----	----	29.8
		Locked rotor amps	----	----	185.0
	18.6 kW (25 hp)	Full load amps	----	----	----
		Locked rotor amps	----	----	36.0
Return Air Blower Motor	1.1 kW (1½ hp)	Full load amps	2.7	----	----
		Locked rotor amps	17.8	----	----
	2.2 kW (3 hp)	Full load amps	5.0	5.0	5.0
		Locked rotor amps	28.0	28.0	28.0
	3.7 kW (5 hp)	Full load amps	7.8	7.8	7.8
		Locked rotor amps	50.0	50.0	50.0
	5.6 kW (7½ hp)	Full load amps	----	----	11.8
		Locked rotor amps	----	----	79.5
Exhaust Fan Motors	Full load amps	(3) — 2.1	(3) — 2.1	(3) — 2.2	
	Locked rotor amps	(3) — 3.7	(3) — 3.7	(3) — 10.8	
Electric heat — full load amps/element		15.7	15.7	15.7	
Control circuit amps		*1.3	*1.3	*1.9	
Burner circuit amps		*3.8	*3.8	----	

*220/240 volt, amperage shown is for step-down transformer input.

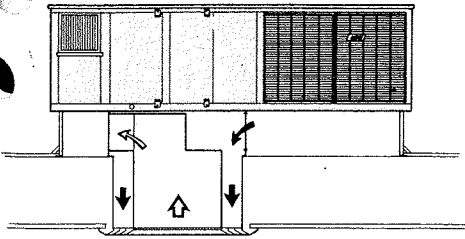
FIELD WIRING



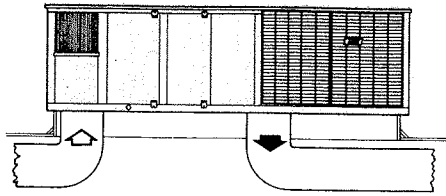
- A — 3 phase power (See electrical data tables)
 - B — 4 wire 24 volt (Room transmitter with non-switching subbase)
 - 1 wire 24 volt (Night setback)
 - 6 wire 24 volt (Room transmitter with AUTO-OFF subbase)
 - 1 wire 24 volt (Night setback)
 - 9 wire 24 volt (Room transmitter with HEAT-OFF-COOL subbase)
 - 1 wire 24 volt (Night setback)
 - C — 10 wire 24 volt
 - D — 8 wire high voltage (Optional smoke test stations)
 - 4 wire high voltage (Optional hookup to alarm system)
 - E — 2 wire 24 volt
 - F — 3 wire 24 volt
- NOTE - Field wiring not furnished by Lennox.

All wiring must conform to local electrical codes.

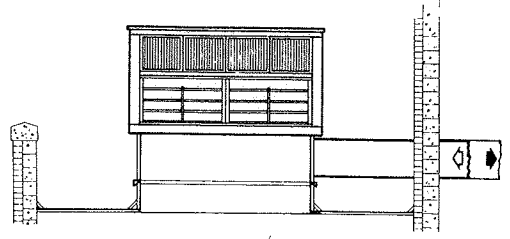
AIR PATTERN CHOICE



Combination Ceiling Supply and Return Air Duct Application
(DSS1-300 and DSS1-360 only)



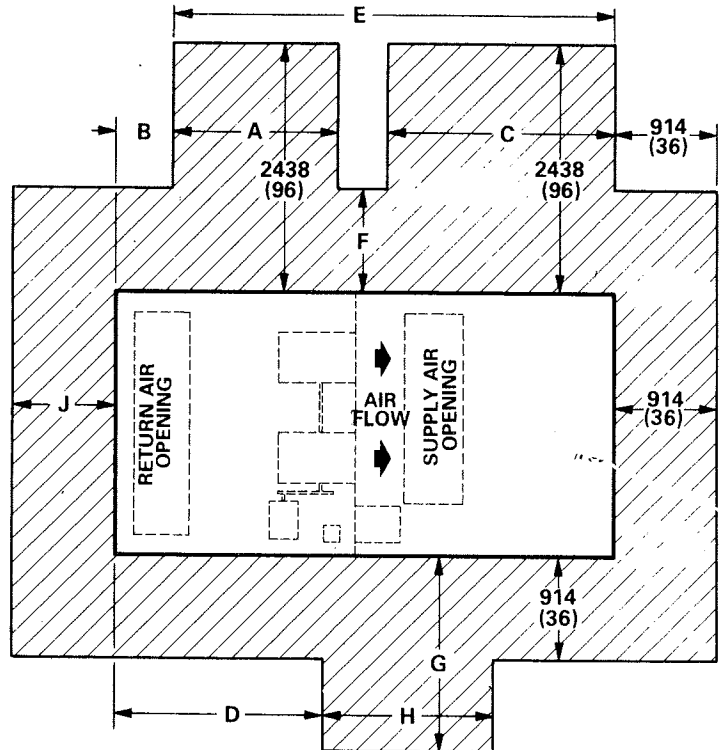
Separate Supply and Return Air (Double) Duct Application



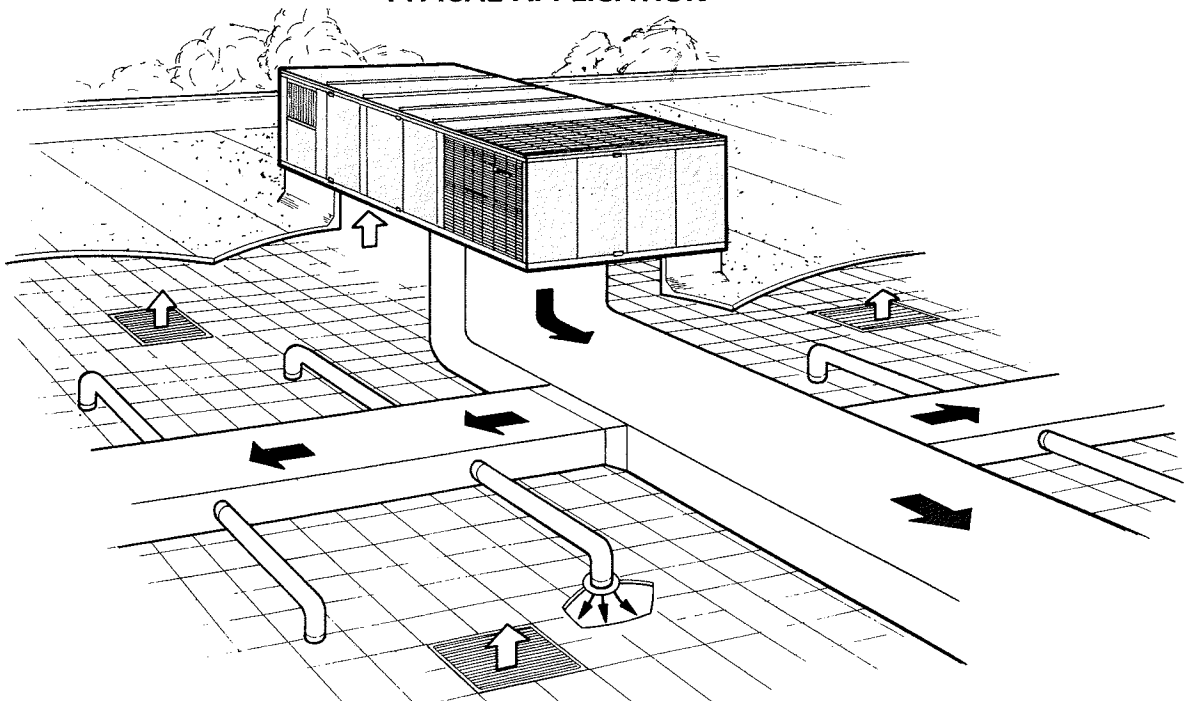
Horizontal Supply and Return Air (side by side) Duct Application
(DSS1-300 and DSS1-360 only)

SERVICE CLEARANCES — mm (inches)

Model No.		DSS1	DSS1	DSS1	DSS1
		300-360/176	300-360/229	300-360/266	450-600/266
A	mm	1473	2337	----	2616
	in.	58	92	----	103
B	mm	508	1016	1016	1270
	in.	20	40	40	50
C	mm	2032	2032	----	2159
	in.	80	80	----	85
D	mm	1880	3251	----	3810
	in.	74	128	----	150
E	mm	----	----	5740	----
	in.	----	----	266	----
F	mm	914	914	----	914
	in.	36	36	----	36
G	mm	1829	1829	----	1829
	in.	72	72	----	72
H	mm	762	762	----	889
	in.	30	30	----	35
J With Return Air Blower	mm	----	1524	1524	1778
	in.	----	60	60	70
J Without Return Air Blower	mm	914	914	914	914
	in.	36	36	36	36

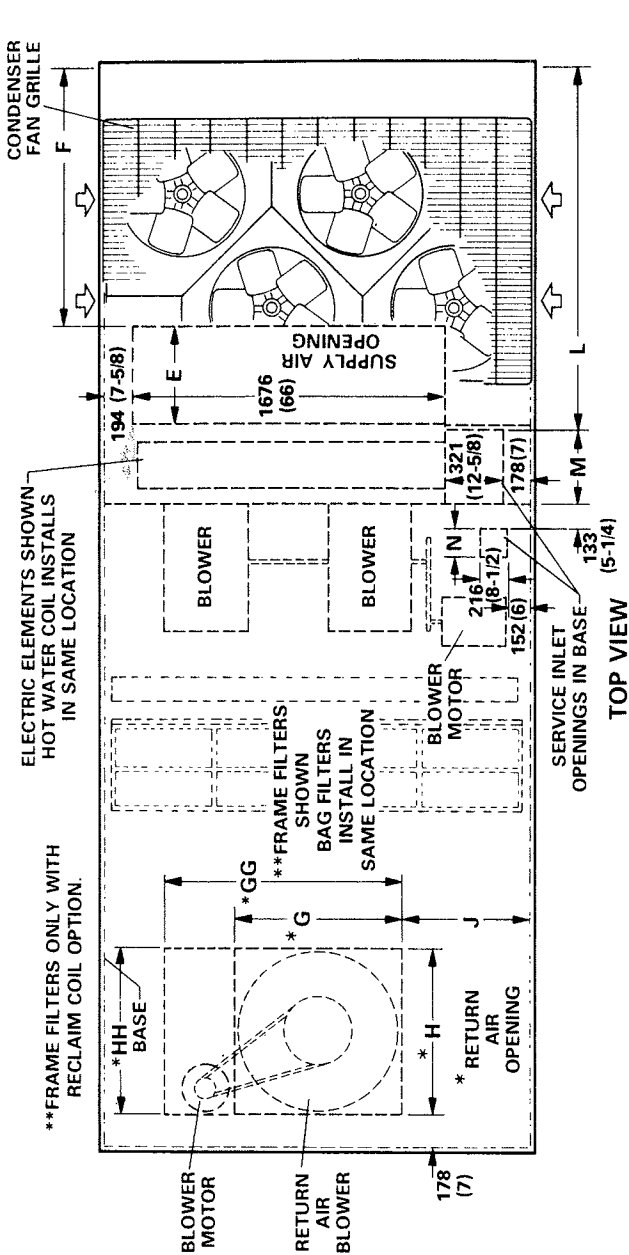


TYPICAL APPLICATION



DIMENSIONS — mm (inches)

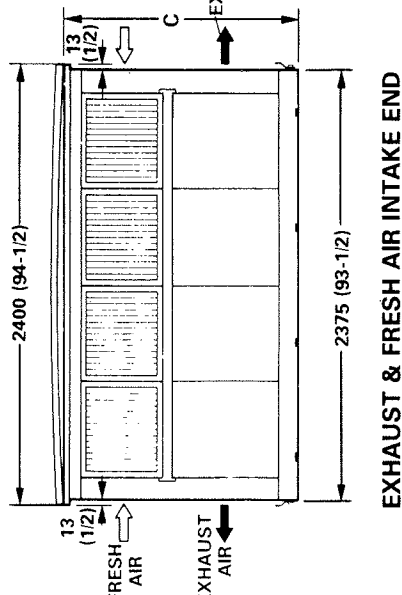
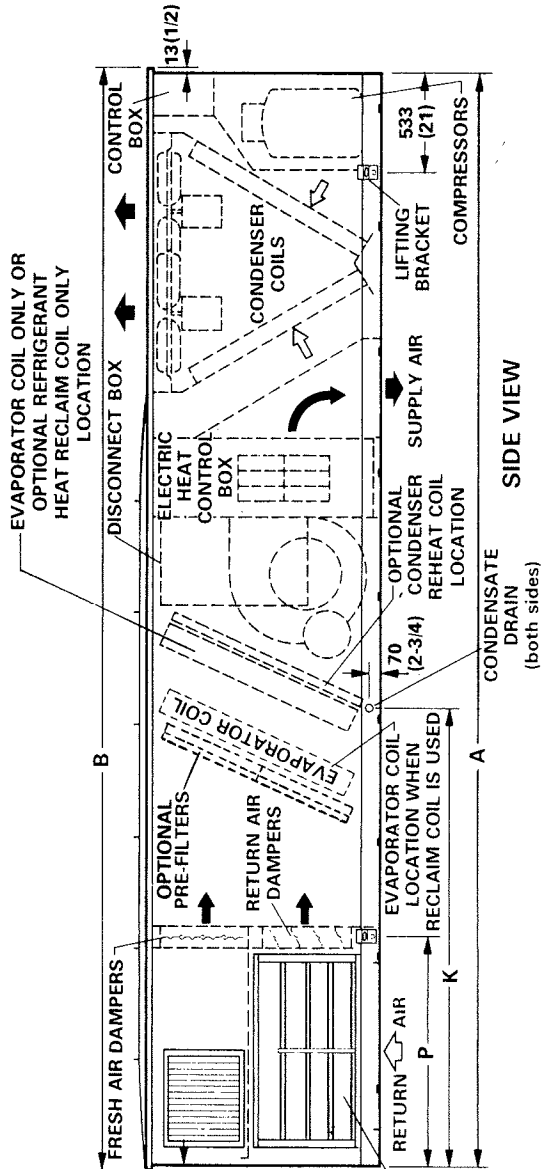
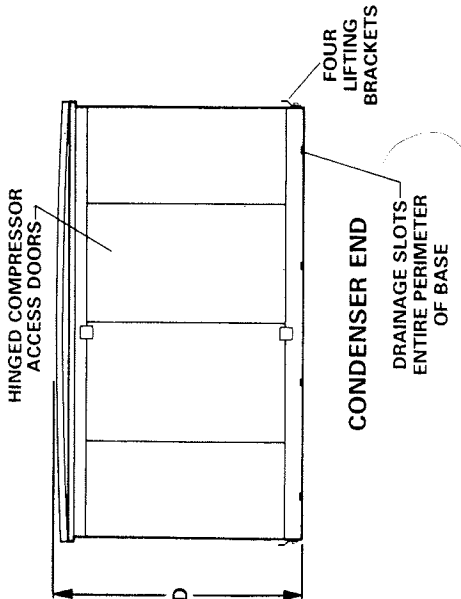
**DSS1-300/229, DSS1-360/229,
DSS1-450/266 & DSS1-600/266**



ELECTRIC ELEMENTS SHOWN
HOT WATER COIL INSTALLS
IN SAME LOCATION

**FRAME FILTERS ONLY WITH
RECLAIM COIL OPTION.

**FRAME FILTERS
SHOWN
BAG FILTERS
INSTALL IN
SAME LOCATION



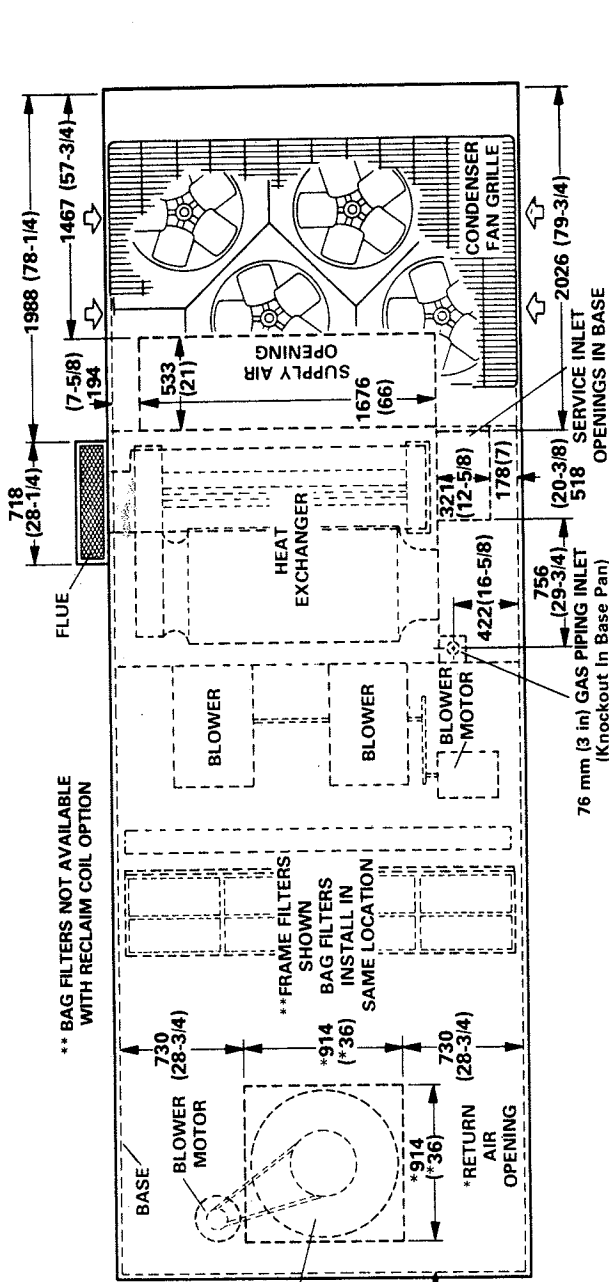
Model No.	A	B	C	D	E	F	**G	**H	*GG	*HH	J	K	L	M	N	P
DSS1-300/229	5817	5842	1310	1354	527	1467	914	914	914	914	730	2359	2026	406	152	1270
DSS1-360/229	229	230	51-9/16	53-5/16	20-3/4	57-3/4	36	36	36	36	28-3/4	92-7/8	79-3/4	16	6	50
DSS1-450/266	6756	6782	1919	1964	813	1580	1041	1041	1321	1041	***	2551	2416	483	203	1549
DSS1-600/266	266	267	75-9/16	77-5/16	32	62-3/16	41	41	52	41	***	100-7/16	95-1/8	19	8	61

*Return air opening for Exhaust Fan Model.

**Return air opening for Return Air Blower Model.

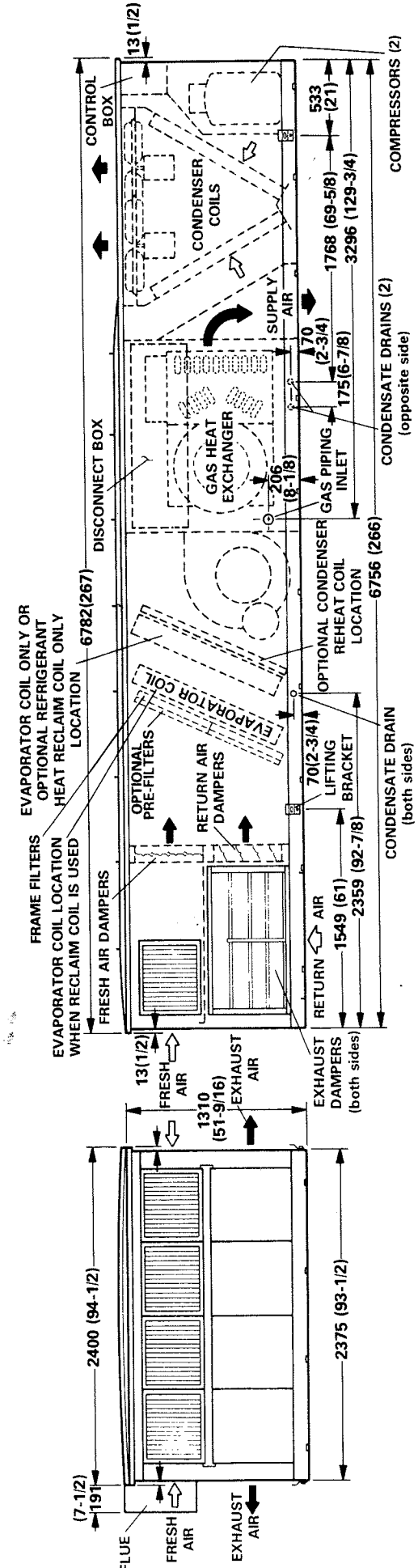
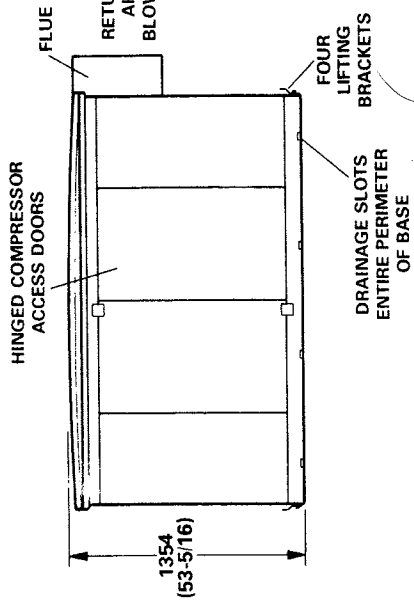
***451mm (17-3/4 in.) with Return Air Blower, 375mm (14-3/4 in.) with Exhaust Fans.

DIMENSIONS — mm (inches)
DSS1-300/266 & DSS1-360/266



** BAG FILTERS NOT AVAILABLE WITH RECLAIM COIL OPTION

**FRAME FILTERS SHOWN BAG FILTERS INSTALL IN SAME LOCATION



ROOF MOUNTING FRAMES

Roof Mounting Frame

Mounting frames are shipped knocked down in a compact package for ease in transportation and lifting to the rooftop. Bolts and rugged joint plates are furnished to secure the sections together at the job site. Holes are provided in the frame sections and joining plates. The entire weight of the unit is transferred uniformly to the mounting frame.

Roof Mounting Frame Supports

The roof mounting frame can be installed directly on the deck or setting on the roof supports under the deck. When the frame sets directly on the deck adequate structural strength in the deck is required. When installing the frames on support members under the deck the following support specifications apply:

1 — With side joint plates bolted the maximum frame span or cantilever between supports is:

	Span	Cantilever
RMF1 Roof Mounting Frame	1270 mm (50 inches)	1473 mm (58 inches)
RMFSR1 Ceiling Supply and Return Mounting Frame.....	1778 mm (70 inches)	1575 mm (62 inches)
RMF1 and AFHD1 Horizontal Discharge Frame.....	2184 mm (86 inches)	1676 mm (66 inches)

2 — With side joint plates welded to frame the maximum frame span or cantilever is:

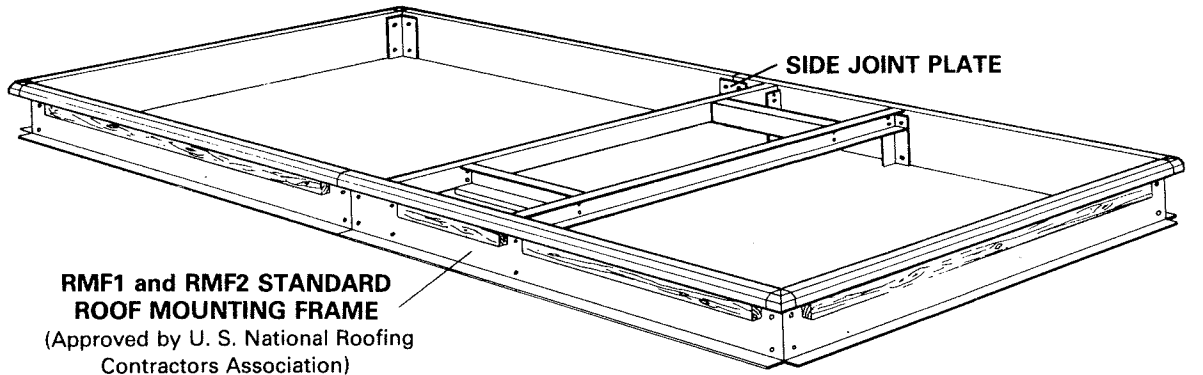
	Span	Cantilever
RMF1 Roof Mounting Frame	3251 mm (128 inches)	1956 mm (77 inches)
RMFSR1 Ceiling Supply and Return Mounting Frame.....	5512 mm (217 inches)	No limit
RMF1 and AFHD1 Horizontal Discharge Frame.....	6401 mm (252 inches)	No limit

3 — There must be at least 813 mm (32 in.) of frame in contact with the roof supports.

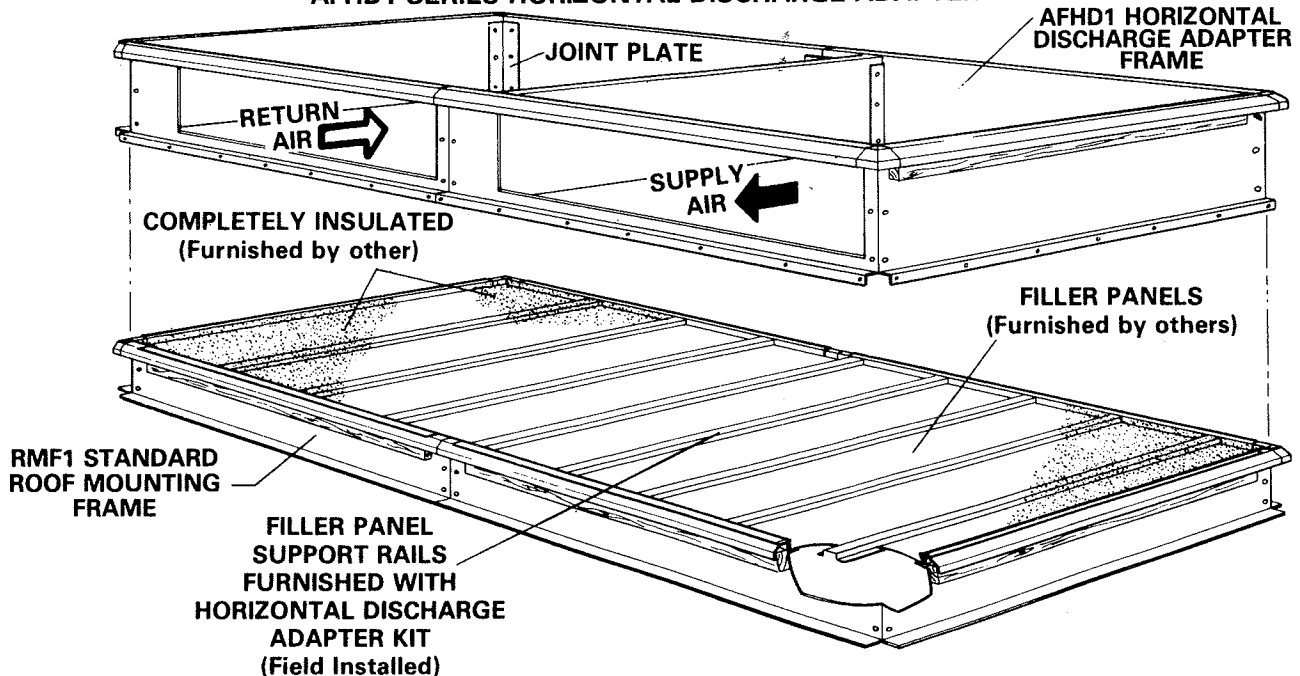
Model No.	RMF1-17614 RMF1-22914 RMF1-26614 RMF2-26614	RMFSR1-17624 RMFSR1-22924 RMFSR1-26624	RMF1-17614 and AFHD1-17624 RMF1-22914 and AFHD1-22924 RMF1-26614 and AFHD1-26624
Mounting Frame Height	356mm (14 inches)	610mm (24 inches)	967mm (38-1/16 in.)
*Frame moment of inertia (I)	$3.57 \times 10^7 \text{ mm}^4$ (86 in. ⁴)	$1.37 \times 10^8 \text{ mm}^4$ (330 in. ⁴)	$1.51 \times 10^8 \text{ mm}^4$ (362 in. ⁴)
* Frame section modulus \bar{c}	$2.02 \times 10^5 \text{ mm}^3$ (12.3 in. ³)	$4.51 \times 10^5 \text{ mm}^3$ (27.5 in. ³)	$4.95 \times 10^5 \text{ mm}^3$ (30.2 in. ³)
Mounting frame weight	9.2 kg/m (6.2 lbs./ft.)	13.7 kg/m (9.2 lbs./ft.)	14.0 kg/m (9.4 lbs./ft.)

*Includes both sides of roof mounting frame.

ROOF MOUNTING FRAMES RMF1 AND RMF2 SERIES ROOF MOUNTING FRAME



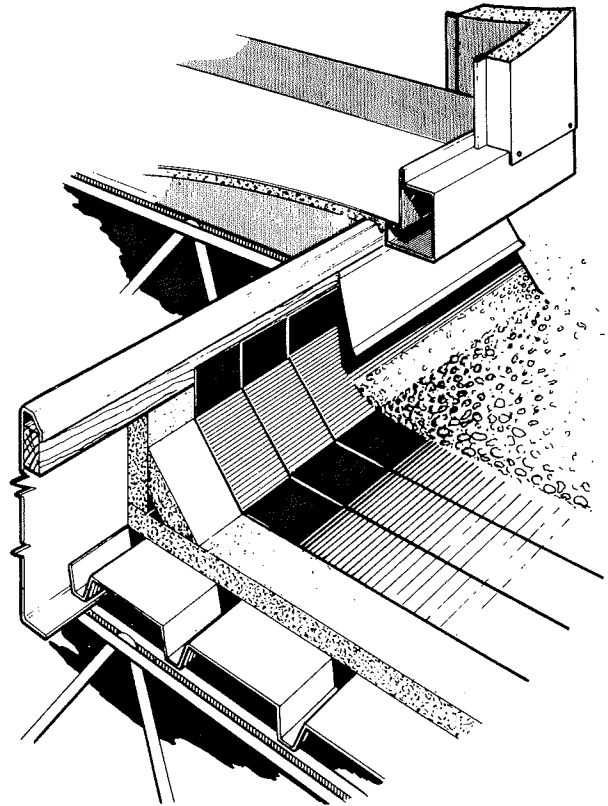
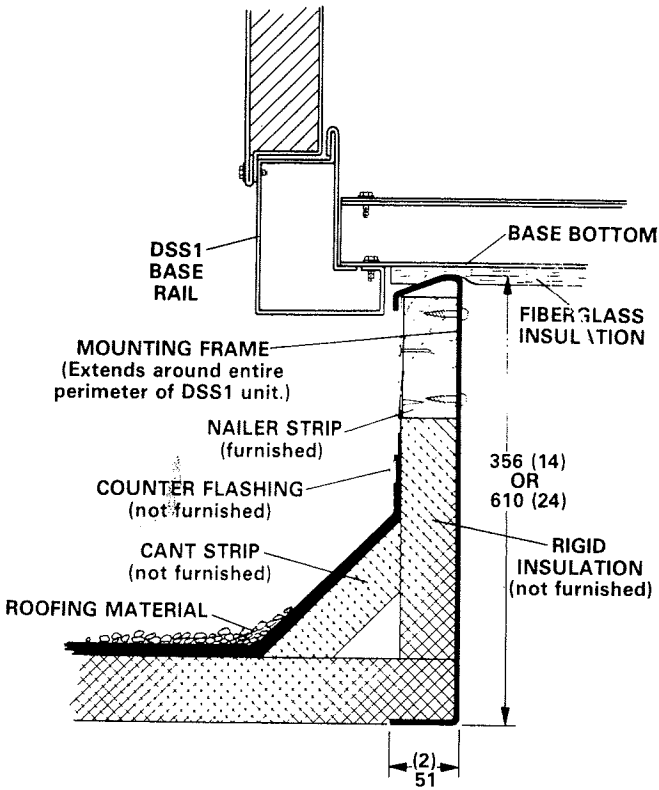
DSS1-300 AND DSS1-360 AFHD1 SERIES HORIZONTAL DISCHARGE ADAPTER FRAME



NOTE — Filler panel support rails are 2064mm (81-1/4 in.) long. See installation instructions for recommended size and location of filler panels.

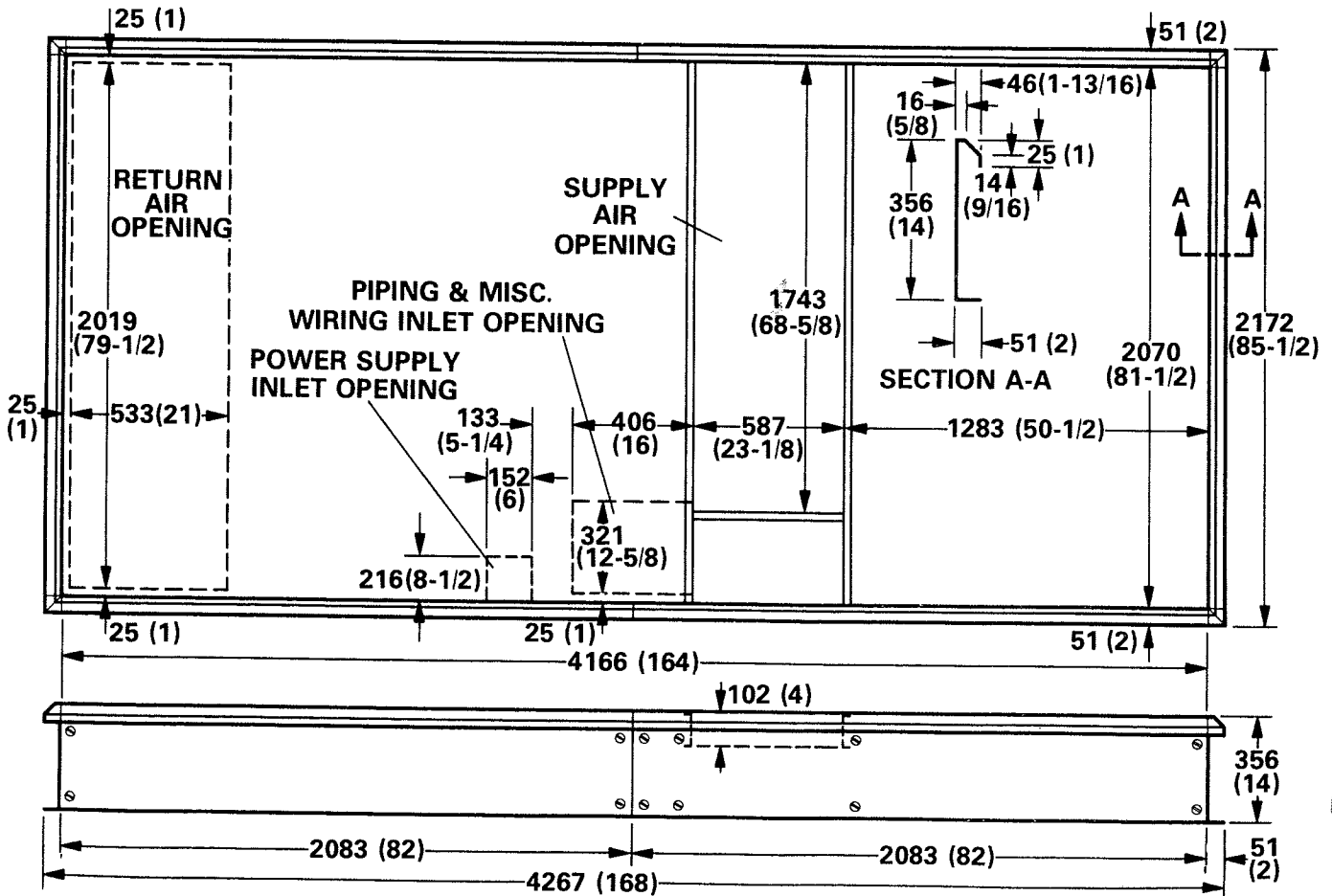
ROOF MOUNTING FRAMES

ROOF MOUNTING FRAME DETAILS — mm (inches)

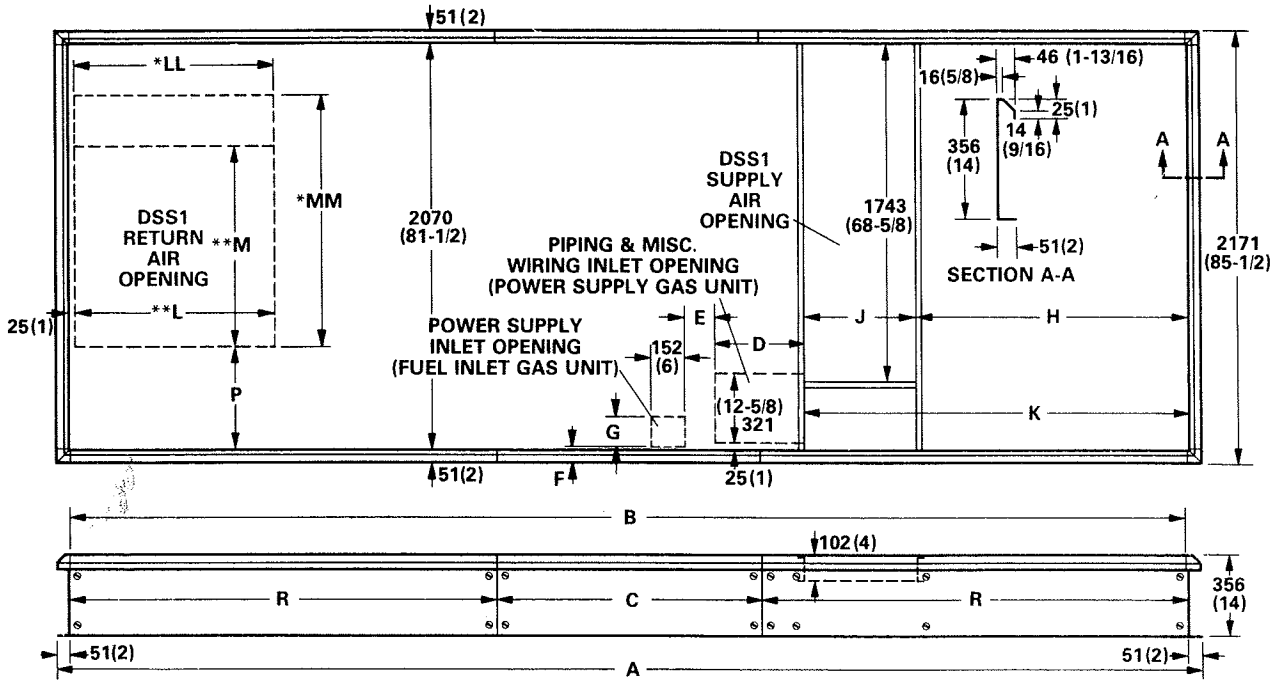


ROOF MOUNTING FRAME DIMENSIONS — mm (inches)

DSS1-300 AND DSS1-360 RMF1-17614 ROOF MOUNTING FRAME



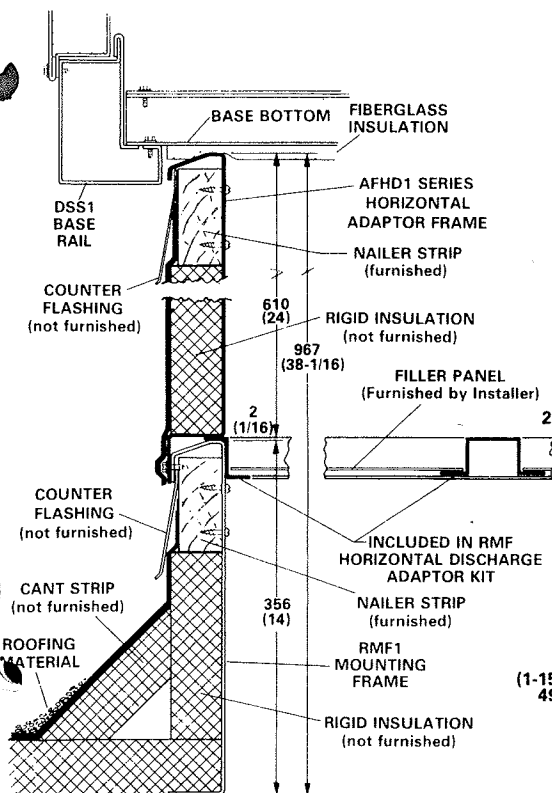
ROOF MOUNTING FRAME DIMENSIONS — mm (inches)
DSS1-300-360 RMF1-22914 and RMF1-26614 ROOF MOUNTING FRAME
DSS1-450-600 RMF2-26614 MOUNTING FRAME



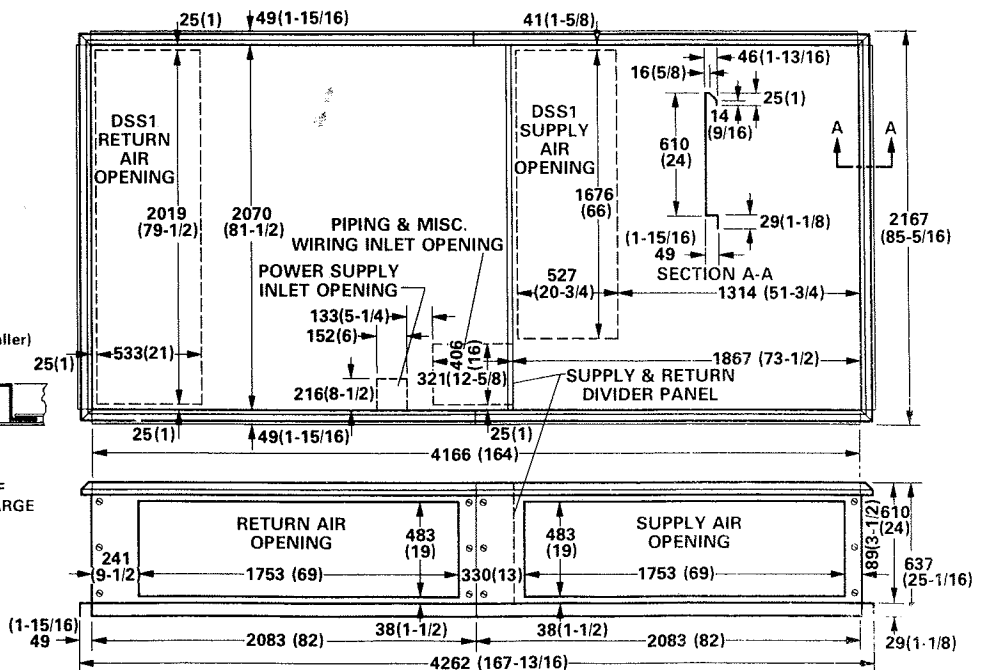
Model No.		A	B	C	D	E	F	G	H	J	K	**L	**M	*LL	*MM	P	R
RMF1-22914	mm	5613	5512	1346	406	133	51	216	1283	587	1870	914	914	914	914	578	2083
	in.	221	217	53	16	5-1/4	2	8-1/2	50-1/2	23-1/8	73-5/8	36	36	36	36	22-3/4	82
RMF1-26614	mm	6553	6452	2286	518	679	244	152	1283	587	1870	914	914	914	914	578	2083
	in.	258	254	90	20-3/8	26-3/4	9-5/8	6	50-1/2	23-1/8	73-5/8	36	36	36	36	22-3/4	82
RMF2-26614	mm	6553	6452	2286	483	133	51	216	1397	867	2264	1041	1041	1041	1321	***	2438
	in.	258	254	90	19	5-1/4	2	8-1/2	55	34-1/8	89-1/8	41	41	41	52	***	96

*Return air opening for Exhaust Fan Model.
 **Return air opening for Return Air Blower Model.
 ***451mm (17-3/4 in.) Return Air Model, 375mm (14-3/4 in.) for Exhaust Fan Model.

AFHD1 SERIES ADAPTER FRAME DETAIL

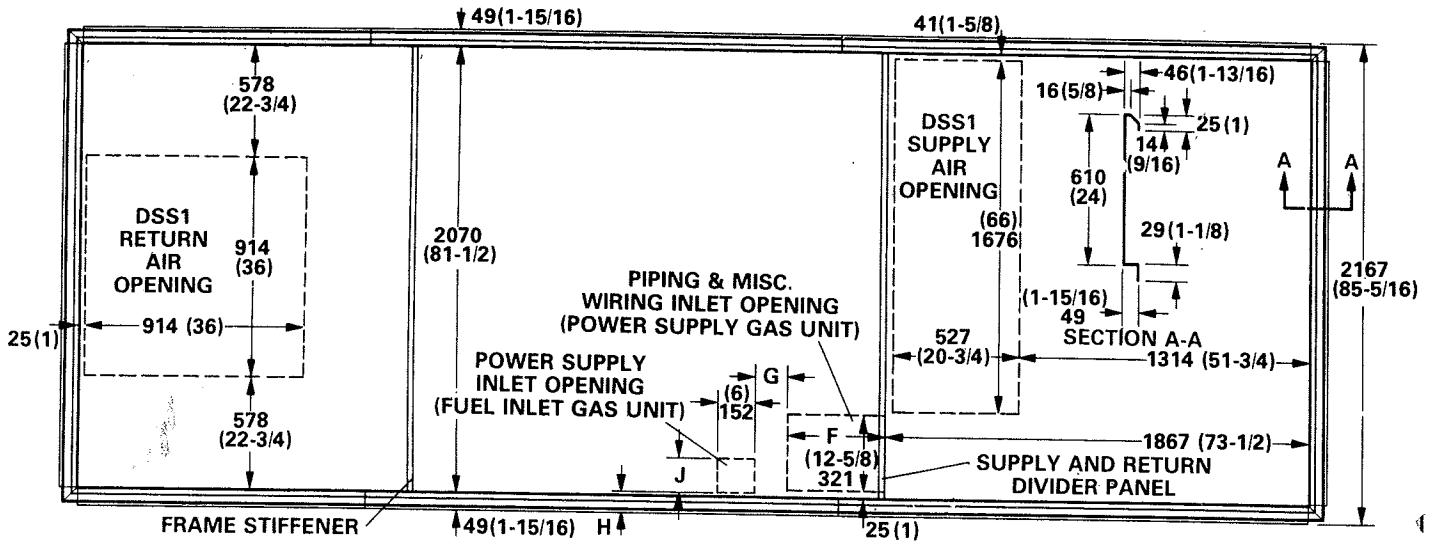


DSS1-300 AND DSS1-360
AFHD1-17624 HORIZONTAL DISCHARGE ADAPTER FRAME

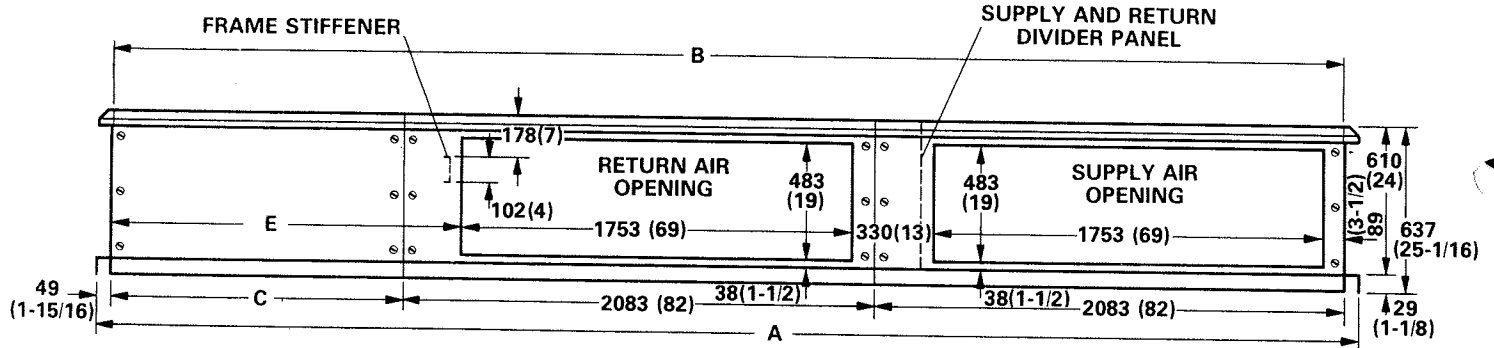


HORIZONTAL DISCHARGE ADAPTER FRAME DIMENSIONS — mm (inches)

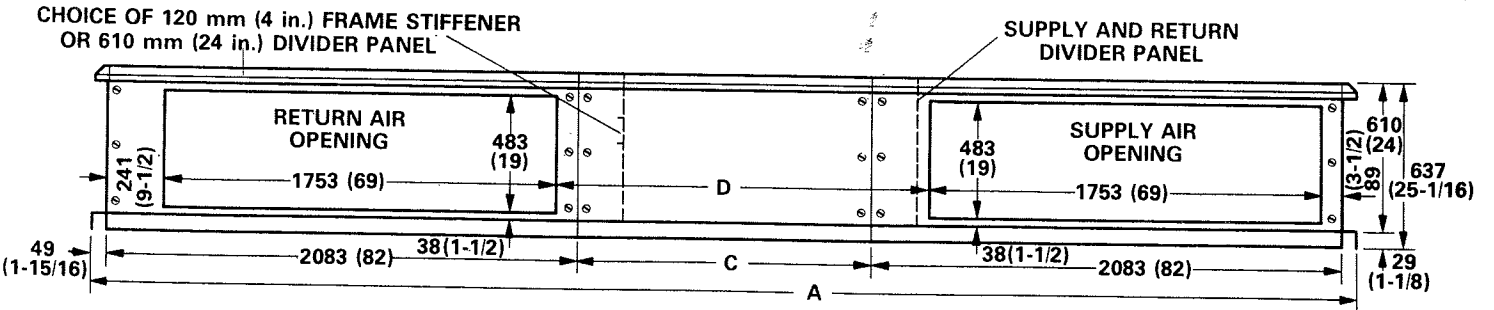
DSS1-300 and DSS1-360 AFHD1-22924 and AFHD1-26624 HORIZONTAL DISCHARGE ADAPTER FRAME



STANDARD ARRANGEMENT

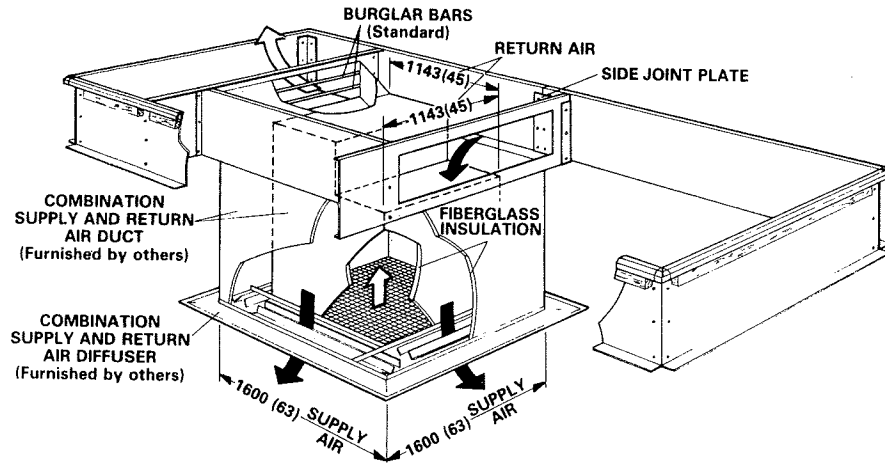


ALTERNATE ARRANGEMENT

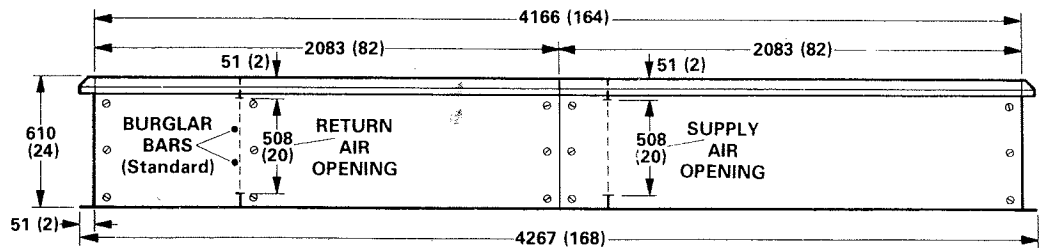
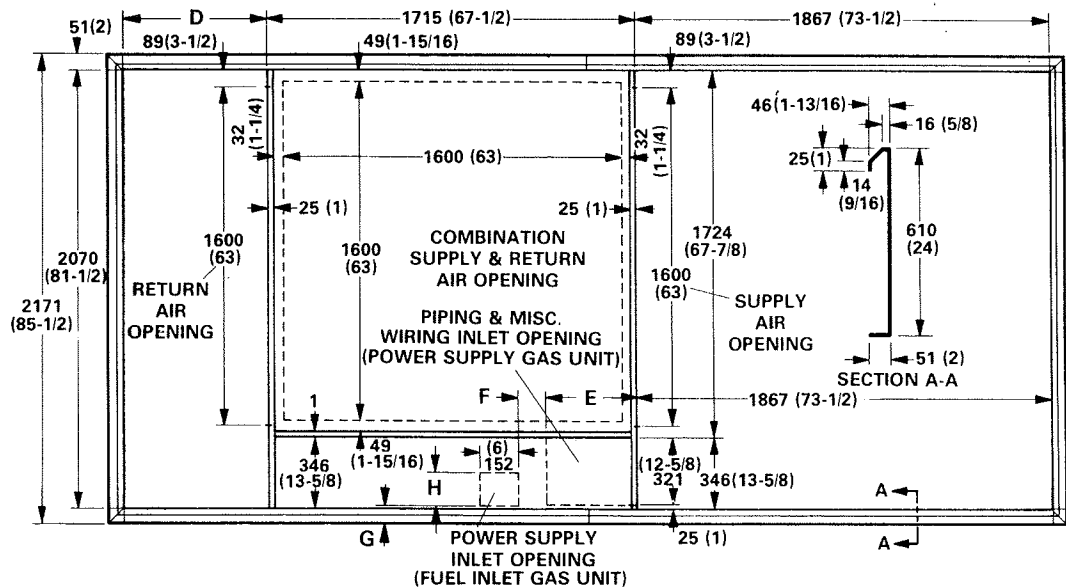


Model No.		A	B	C	D	E	F	G	H	J
AFHD1-22924	mm	5609	5512	1346	1676	1588	406	133	51	216
	in.	220-13/16	217	53	66	62-1/2	16	5-1/4	2	8-1/2
AFHD1-26624	mm	6548	6452	2286	2616	2527	518	679	244	152
	in.	257-13/16	254	90	103	99-1/2	20-3/8	26-3/4	9-5/8	6

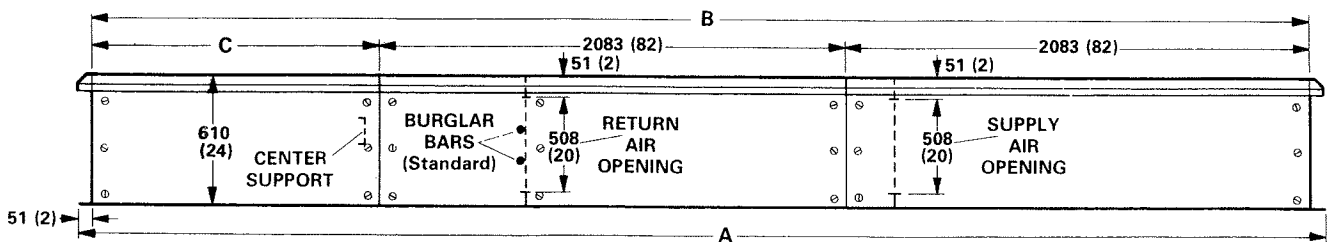
**ROOF MOUNTING FRAMES
DSS1-300 AND DSS1-360
RMFSR1 SERIES COMBINATION
CEILING SUPPLY AND RETURN ROOF MOUNTING FRAME — mm (inches)**



DIMENSIONS — mm (inches)



SIDE VIEW OF RMFSR1-17624

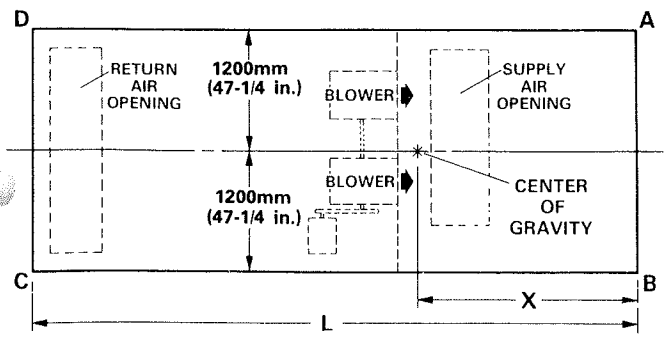


SIDE VIEW of RMFSR1-22924 and RMFSR1-26624

Model No.		A	B	C	D	E	F	G	H
RMFSR1-17624	mm	----	----	----	584	406	133	51	216
	in.	----	----	----	23	16	5-1/4	2	8-1/2
RMFSR1-22924	mm	5613	5512	1346	1930	406	133	51	216
	in.	221	217	53	76	16	5-1/4	2	8-1/2
RMFSR1-26624	mm	6553	6452	2286	2870	518	679	246	152
	in.	258	254	90	113	20-3/8	26-3/4	9-5/8	6

UNIT NET WEIGHT, CENTER OF GRAVITY AND CORNER WEIGHTS

Components		Total Net Weight (kg.)	Total Net Weight (lbs.)	Moment in "X" Direction
Basic unit DSS1-300/176 & DSS1-360/176		1014	2235	197 000
Basic unit DSS1-300/229 & DSS1-360/229		1161	2560	282 000
Basic unit DSS1-300/266 & DSS1-360/266		1309	2885	374 000
Basic unit DSS1-450/266 & DSS1-600/266		1574	3470	429 000
Roof Mounting Frame Options	RMF1-17614	138	305	25 000
	RMF1-22914	166	365	46 000
	RMF1-26614	184	405	51 000
	RMF2-26614	184	405	51 000
	RMFSR1-17624	193	425	35 000
	RMFSR1-22924	231	510	55 000
	RMFSR1-26624	259	570	72 000
	AFHD1-17624	197	435	38 000
AFHD1-22924	238	525	67 000	
AFHD1-26624	261	575	73 000	
Cooling Options	Complete System DSS1-300-360/176/229	708	1560	72 000
	Complete System w/reheat DSS1-300-360/176/229	760	1675	87 000
	Complete System DSS1-300-360/266	708	1560	82 000
	Complete System w/reheat DSS1-300-360/266	760	1675	101 000
	Complete System DSS1-450-600/266	1179	2600	157 000
	Complete System w/reheat DSS1-450-600/266	1225	2700	172 000
Heating Options	Electric Section DSS1-300-360	127	280	25 000
	Hot Water Coil DSS1-300-360	104	230	20 000
	Gas Heat Section DSS1-300-360	281	620	60 000
	Electric Section DSS1-450-600	179	395	39 000
Hot Water Coil DSS1-450-600	179	395	39 000	
Supply Air Blower Motor	2.2 — 3.7 — 5.6 kW (3 — 5 — 7-1/2 hp) DSS1-300-360/176/229	68	150	18 000
	7.5 — 11.2 kW (10 — 15 hp) DSS1-300-360/176/229	114	251	30 000
	2.2 — 3.7 kW (3 — 5 hp) DSS1-300-360/266	47	104	16 000
	5.6 — 7.5 — 11.2 kW (7-1/2 — 10 — 15 hp) DSS1-300-360/266	114	251	39 000
	3.7 kW (5 hp) DSS1-450/266	47	104	14 000
	5.6 kW (7-1/2 hp) DSS1-450-600/266	68	150	21 000
	7.5 kW (10 hp) DSS1-450-600/266	92	181	25 000
	11.2 kW (15 hp) DSS1-450-600/266	114	251	35 000
	14.9 kW (20 hp) DSS1-450-600/266	104	230	32 000
18.6 kW (25 hp) DSS1-450-600/266	143	315	44 000	
Filters	Bag — DSS1-300-360/229	45	100	15 000
	Bag — DSS1-300-360/266	45	100	19 000
	Slab or Bag — DSS1-450-600/266	53	117	22 000
POWER SAVER	DSS1-300-360/176	70	155	22 000
	DSS1-300-360/229	70	155	28 000
	DSS1-300-360/266	70	155	33 000
	DSS1-450-600/266	141	311	66 000
Return Air Blower	DSS1-300-360/229	240	530	108 000
	DSS1-300-360/266	240	530	128 000
	DSS1-450-600/266	239	528	126 000
Exhaust Fans	DSS1-300-360/176	58	128	22 000
	DSS1-300-360/229	58	128	28 000
	DSS1-300-360/266	58	128	33 000
	DSS1-450-600/266	90	199	51 000
Refrigerant Heat Reclaim Coils	2 Row Complete System w/reclaim DSS1-300-360/229	769	1695	93 000
	3 Row Complete System w/reclaim DSS1-300-360/266	792	1745	100 000
	4 Row Complete System w/reclaim DSS1-300-360/229	792	1745	116 000
	6 Row Complete System w/reclaim DSS1-300-360/266	812	1790	105 000
	2 Row Complete System w/reclaim DSS1-300-360/229	812	1790	124 000
	3 Row Complete System w/reclaim DSS1-300-360/266	857	1890	118 000
	4 Row Complete System w/reclaim DSS1-300-360/266	857	1890	140 000
	2 Row Complete System w/reclaim DSS1-450-600/266	1250	2755	192 000
	3 Row Complete System w/reclaim DSS1-450-600/266	1288	2840	206 000
	4 Row Complete System w/reclaim DSS1-450-600/266	1328	2927	219 000
6 Row Complete System w/reclaim DSS1-450-600/266	1441	3177	258 000	



How to calculate center of gravity:

- 1 — Add up **System Components weights in lbs.** to arrive at **Total Net weight in lbs.**
- 2 — Add up **Moment in "X" Direction** figures to arrive at a total.
- 3 — Divide total **Moment in "X" Direction** by **Total Wt. (lbs.)** to obtain "X".
- 4 — Multiply "X" (inches) by **25.4** to obtain "X" (mm).

How to calculate corner weight:

A & B = (Weight of Unit) $\left(\frac{L-X}{L}\right)$ C & D = (Weight of Unit) $\left(\frac{X}{L}\right)$

BLOWER DATA BLOWER DRIVE SELECTION

Using total air volume and system Static Pressure External to Unit requirements, determine from Blower Performance curves (loose leaf, indexed immediately after this bulletin) Rev/Min and Blower Motor Output required for job. Specify Blower Motor Output, Rev/

Min and electrical characteristics required when ordering. The correct motor and pulleys will be factory installed. The following tables list Motor Output and blower speed range of drives available with each motor.

SUPPLY AIR BLOWER

Model No.	*Nominal Motor Output		Blower Speed — Rev/Min @ ** 1440 Rev/Min Motor Speed
	kW	hp	
DSS1-300	2.2	3	565 — 720
DSS1-300	3.7	5	660 — 840
DSS1-360	5.6	7-1/2	840 — 995
	7.5	10	†950 — 1010 — 1070
DSS1-360	11.2	15	†1045 — 1120 — 1195
DSS1-450	3.7	5	540 — 655
	5.6	7-1/2	630 — 755
DSS1-450	7.5	10	†695 — 745 — 790
DSS1-600	11.2	15	†820 — 895 — 935
	14.9	20	†930 — 1000 — 1045
DSS1-600	18.6	25	†1045 — 1125 — 1180

*Service Factor = 1.15 (Do not exceed Nominal Motor Output with Refrigerant Heat Reclaim Coil.)

**2880 rev/min motor speed for 11.2 kW (15 hp) motor.

†Fixed pulleys at rev/min increments shown.

RETURN AIR BLOWER

Model No.	*Nominal Motor Output		Blower Speed — Rev/Min @ 1440 Rev/Min Motor Speed
	kW	hp	
DSS1-300	1.1	1-1/2	345 — 440
DSS1-300	2.2	3	460 — 550
DSS1-360	3.7	5	540 — 655
DSS1-450	2.2	3	540 — 655
DSS1-600	3.7	5	640 — 755
	5.6	7-1/2	760 — 915

*Service factor = 1.15

EXHAUST FAN PERFORMANCE

Model No.	Air Volume Exhausted		Static Pressure External to Unit (Return Air System)	
	m ³ /s	cfm	Pa	in. wg.
DSS1-300 DSS1-360	4.44	9400	0	0
	3.78	8000	25	0.10
	3.14	6650	50	0.20
	2.43	5150	75	0.30
DSS1-450 DSS1-600	1.60	3400	100	0.40
	6.61	14 000	0	0
	5.85	12 400	25	0.10
	5.05	10 700	50	0.20
	4.25	9000	75	0.30
	3.40	7200	100	0.40
	2.60	5500	125	0.50
	1.98	4200	150	0.60

SUPPLY AIR MOTOR REQUIREMENTS FOR GAS HEAT

Supply Air Blower Motor		Maximum Static Pressure		Air Temperature Rise Range	
kW	hp	Pa	in. wg.	°C	°F
*2.2	*3	125	0.50	39 - 56	70 - 100
3.7	5	188	0.75	39 - 56	70 - 100
5.6	7-1/2	250	1.00	31 - 47	55 - 85
7.5	10	375	1.50	25 - 42	45 - 75
**11.2	**15	500	2.00	25 - 42	45 - 75

*DSS1-300 only

**DSS1-360 only

DSS1-300-360-450-600 ACCESSORY PRESSURE DROP

Model No.	Air Volume		†Total Pressure Drop							
			*Bag Filters		Frame Pre-filters 25mm (1 in.) Thick		Indoor Condenser Reheat Coil		2 Row Hot Water Coil	
	m ³ /s	cfm	Pa	in. wg.	Pa	in. wg.	Pa	in. wg.	Pa	in. wg.
DSS1-300 DSS1-360	2.85	6000	17	0.07	10	0.04	15	0.06	15	0.06
	3.05	6500	17	0.07	10	0.04	17	0.07	15	0.06
	3.30	7000	20	0.08	12	0.05	20	0.08	17	0.07
	3.55	7500	22	0.09	15	0.06	22	0.09	20	0.08
	3.80	8000	25	0.10	17	0.07	25	0.10	20	0.08
	4.00	8500	25	0.10	17	0.07	27	0.11	22	0.09
	4.25	9000	27	0.11	20	0.08	30	0.12	22	0.09
	4.50	9500	30	0.12	22	0.09	35	0.14	25	0.10
	4.70	10 000	32	0.13	25	0.10	37	0.15	25	0.10
	4.95	10 500	32	0.13	25	0.10	42	0.17	30	0.12
	5.20	11 000	35	0.14	27	0.11	45	0.18	37	0.15
	5.45	11 500	37	0.15	30	0.12	50	0.20	42	0.17
	5.65	12 000	40	0.16	32	0.13	55	0.22	50	0.20
	DSS1-450 DSS1-600	4.70	10 000	17	0.07	10	0.04	15	0.06	15
4.95		10 500	20	0.08	12	0.05	20	0.08	17	0.07
5.20		11 000	22	0.09	15	0.06	22	0.09	20	0.08
5.45		11 500	22	0.09	15	0.06	22	0.09	20	0.08
5.65		12 000	25	0.10	17	0.07	25	0.10	20	0.08
5.90		12 500	25	0.10	17	0.07	27	0.11	22	0.09
6.15		13 000	25	0.10	17	0.07	27	0.11	22	0.09
6.35		13 500	27	0.11	20	0.08	30	0.12	22	0.09
6.60		14 000	30	0.12	22	0.09	32	0.13	25	0.10
6.85		14 500	30	0.12	22	0.09	35	0.14	25	0.10
7.10		15 000	32	0.13	25	0.10	37	0.15	25	0.10
7.30		15 500	32	0.13	25	0.10	40	0.16	27	0.11
7.55		16 000	32	0.13	25	0.10	42	0.17	27	0.11
7.80		16 500	35	0.14	27	0.11	45	0.18	37	0.15
8.00		17 000	37	0.15	30	0.12	50	0.20	42	0.17
8.25		17 500	37	0.15	30	0.12	52	0.21	47	0.19
8.50	18 000	40	0.16	32	0.13	55	0.22	50	0.20	

†Pressure drop shown must be added to system static pressure when selecting blower speed and Motor Output requirements.

*Frame filter resistance has been deducted from figures shown in table

NOTE — Power Saver pressure drop is not appreciable.

GUIDE SPECIFICATIONS

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

General — Furnish and install a roof mounted single package single zone heating-cooling unit complete with automatic controls. The single zone system shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment.

The installed weight shall not be more than kg (lbs.). The equipment shall be shipped completely factory assembled, pre-charged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate the system at the factory before shipment.

Roof Mounting Frame — Furnish and install a steel roof mounting frame. 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.

Air Distribution — Equipment shall be capable of bottom handling of conditioned air. All air distribution ducts shall be fiberglass or galvanized steel insulated with mm (in.) thick kg/m³ (lb/ft³) density fiberglass or equivalent. DSS1-300-360 optional roof mounting frames shall permit horizontal discharge and return air duct connection to the equipment or combination supply and return air duct connection to ceiling diffuser. Ducts and ceiling diffuser shall be furnished by the installer.

DX Cooling System — The total certified cooling capacity shall not be less than kW (Btuh) with an evaporator air volume of m³/s (cfm), an entering wet bulb air temperature of °C (°F) and outdoor air db temperature of °C (°F). The compressor power input shall not exceed kW at these conditions.

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to copper tubes. All coils shall be factory pressure leak tested. The system shall consist of independent refrigerant systems including compressor, condenser coil, condenser fans and evaporator coil with expansion valve. Optional factory installed low ambient and hot gas by-pass controls shall be available. The condenser coils shall have sub-cooling rows. The compressor shall be internally spring mounted and have positive crankshaft lubrication, crankcase heater, high and low pressure switches, compressor monitor, motor in-winding temperature sensing thermostats, low ambient sensor and solid-state overload protector (L6 only).

Latent Load Discriminator — Shall be available on models equipped with L6 two speed compressor. Factory installed option shall allow latent capacity manipulation and energy savings without loss of comfort conditions.

Dehumidification/Reheat Condenser Coil — Refrigeration system shall have available an optional dehumidification/reheat condenser coil which delivers approximately kW (Btuh) of heat to maintain humidity control without overcooling. Coil shall be factory installed downstream and adjacent to the evaporator coil and controlled by a dehumidistat in the return air stream.

Refrigerant Heat Reclaim Coil — The refrigeration system shall have available an optional refrigerant heat reclaim coil to use the condenser heat rejected from refrigeration equipment installed in a supermarket to heat the store. Coil shall be factory installed downstream from the evaporator coil and upstream from the heating section. Coil shall provide maximum heat reclaim and dehumidification with reheat.

Electric Heating System — The certified total heating capacity output shall be kW (Btuh) at volts power supply.

Heating elements shall be nichrome bare wire exposed directly to the air stream. Time delay relay shall bring the elements on and off in sequence with a time delay between each element. Safety controls shall consist of a discharge air limit control, secondary limit control and thermal safety devices. Outdoor air temperature thermostat shall be available to lock out second stage heat, allowing operation only when required.

Hot Water Heating System — The certified total heating capacity output shall be kW (Btuh) with a heating coil air volume of m³/s (cfm) at water entering temperature of °C (°F) and a flow rate of Liter/s (gpm) and an entering air temperature of °C (°F). A three way modulating water valve shall be available. The coil shall be of 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.

Gas Heating System — The certified total heating capacity output shall be kW (Btuh) with a gas input of kW (Btuh). Automatic controls furnished as standard equipment shall give two stage operation. Cylindrical drum and tube heat exchanger shall be constructed of (glass coated steel or stainless steel). Combination stainless and aluminized steel power burner shall have prepurge, electric spark ignition (continuous pilot flame during main burner operation), 100% safety shutoff controls, electronic flame sensing controls, series gas valves and limit controls. Staging control shall be with separate gas valves. All controls shall be listed for operation at low outdoor air temperatures. Burner shall be equipped with inspection window and air shutter for combustion air adjustment. Visual inspection of burner flame shall be possible thru observation port at rear of heat exchanger. Complete service access shall be provided for controls and wiring. Outdoor air temperature thermostat shall be furnished to lock out second stage heat, permitting operation only when required.

Electronic Energy Saving Control System — Shall consist of a room temperature sensing transmitter, a supply air sensor and a load analyzer control module with circuit board and heat-cool logic relays to operate the mechanical equipment. Morning warm-up control and enthalpy control shall regulate a modulating damper actuator to provide outdoor air, return air and mixed air volume requirements. The room transmitter and supply air sensor shall have elements with an electrical resistance that varies with temperature. The load analyzer control module shall provide a 24 volt direct current regulated power supply to the room transmitter and heat-cool logic relays. The room transmitter shall convert the room temperature variations from set-point into a proportionally varying direct current voltage. The supply air sensor located in the supply air stream, shall sense the air temperature and provide a signal which combines with the room transmitter signal to give the resultant output load signal. (The voltage signal produced by a 0.6°C (1°F) change at the room transmitter shall equal the signal produced by a 11.1°C (20°F) change at the supply air sensor.) As a result of the supply sensor signal the control system shall respond not only to the room temperature deviations from set-point but also to the effect of the outdoor air and the mechanical systems response to the load. The load analyzer control module shall operate the mechanical equipment, through the heat-cool logic relays, according to the amount of the voltage (signal) received. The logic relays are sensitive to varying voltages and in conjunction with the modulating voltage signals for the mixed air/ventilation damper actuator shall be programmed to operate the mechanical equipment automatically as required, through the heating or cooling and ventilating cycles. The load analyzer control module shall also provide a central location for troubleshooting and identification of improper wiring.

Controls — All controls shall be the sole responsibility of the mechanical equipment manufacturer and shall be installed, wired and tested.

Casing and Frame — All external surfaces shall be painted (outdoor enamel) heavy gauge galvanized steel. All galvanized side panels and access panels shall be insulated with 76mm (3 in.) thick 8 kg/m³ (1/2 lb/ft³) density fiberglass insulation compressed to 51mm (2 in.) thickness between the outer panel and inner panel. The interlocking top panels shall be insulated with 76mm (3 in.) thick 8 kg/m³ (1/2 lb/ft³) density fiberglass insulation. The base section shall be insulated with 13mm (1/2 in.) thick 96 kg/m³ (6 lb/ft³) density fiberglass insulation. Base rails shall be equipped with a series of drainage outlets for moisture removal. Hoisting lugs shall be provided in the base for rigging. All service access panels shall be hinged and equipped with locking type door latches.

(continued on next page)

GUIDE SPECIFICATIONS (Continued)

Supply Air Blowers — *Twin centrifugal supply air blowers shall have permanently lubricated ball bearings, adjustable belt drives and motor mount where belt tension can be easily adjusted. The entire assembly shall be floated on resilient rubber mounts. Blowers shall be capable of delivering m³/s (cfm) at an external static pressure of Pa (inches water gauge) requiring kW (hp) motor output and rev/min.*

Return Air Blower — *Shall have permanently lubricated ball bearings adjustable belt drives and be capable of exhausting cfm at an external static pressure of Pa (inches water gauge) requiring kW (hp) motor output and rev/min.*

Exhaust Fans — *Shall be direct drive blade type fans. Motors shall be overload protected. Fans shall exhaust air through pressure relief dampers.*

Exhaust Dampers — *Damper blades shall ride in nylon bearings. Blades shall be gasketed for tight seal and quiet operation.*

POWER SAVER — *Furnish and install complete with controls an air mixing damper assembly including outside air and return air dampers. Damper blades shall ride in nylon bearings and be equipped with gaskets for tight seal. Damper actuator shall be spring return with infinite resolution and adjustable for minimum position setting.*

Outside Air Dampers (Manual) — *Dampers shall be linked for manual operation and adjustable for minimum position setting. Damper blades shall ride in nylon bearings and be gasketed for tight seal.*

Frame Filters — *Shall be available with a choice of 51mm (2 in.) thick disposable frame type fiberglass media filters, 51mm (2 in.) thick permanent steel frames with throwaway fiberglass media or washable aluminum frame filters with multi-layered expanded aluminum mesh media. Filter rack shall have provisions for addition of pre-filters. Total free area shall be m² (sq. ft.).*

Bag Filter — *Efficient bag filters shall be available as a specified option. Total free area shall be m² (sq. ft.). Shall be available with frame pre-filters.*

Frame Pre-filters — *Shall be available with standard frame filters and bag filters. Filter media shall be 25mm (1 in.) thick washable or vacuum cleanable polyurethane, coated with oil, in aluminum frames.*

Smoke Detector Controls — *Shall be available to detect the presence of smoke within the system and actuate the supply air blower motor and return air blower or exhaust fan motor controls and other devices to prevent the spread of smoke throughout the conditioned area.*

Firestats — *Shall be furnished to terminate equipment operation in case of excessive air temperature. Shall be manual reset.*

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

Remote Readout Panel — *Shall be available for installation within the conditioned area to control and observe equipment operation. The panel shall include signal lights to indicate: system on, combustion lockout, condensing unit inoperative and dirty filter. 7 day time clock, with carryover factory installed in the unit, shall provide night setback operation.*