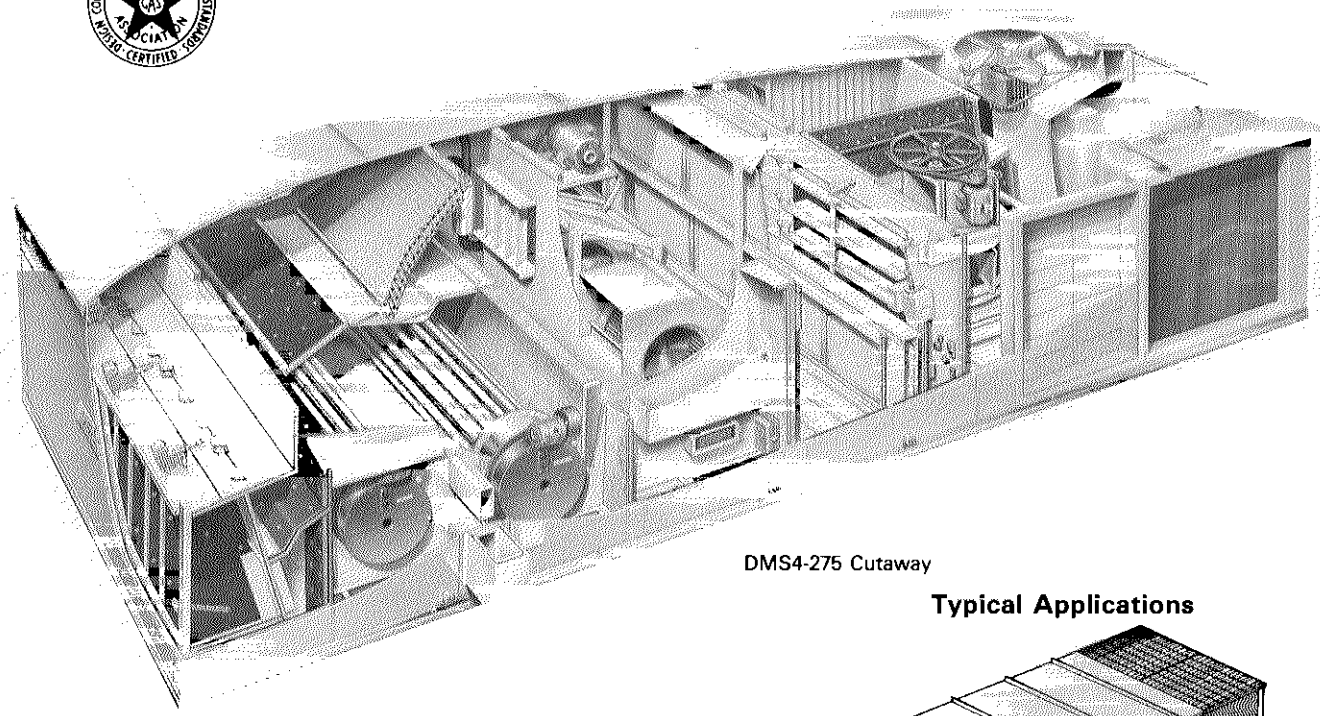
LENNOX®

DIRECT MULTIZONE SYSTEMS
DMS4-185 — DMS4-205
DMS4-275 — DMS4-415
ROOFTOP HEATING — COOLING — VENTILATING WITH MULTIZONE CONTROL



DMS4-275 Cutaway

DMS4 Units Feature Versatile Applications, Efficient Operation And Single Source For Comfort Responsibility

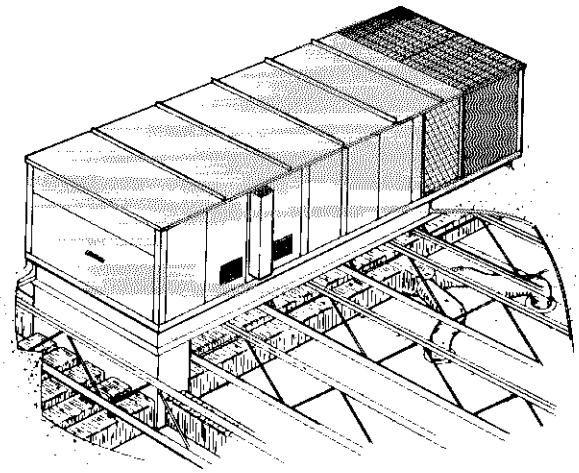
The Lennox DMS4 heating-cooling-ventilating unit is the most sophisticated and significant factory-assembled equipment on the market today. The most effective measures in terms of energy efficiency have been utilized in the design of these units and include: Enthalpy control providing maximum use of outdoor air for cooling. Outside-Air-Discriminator T.M. reduces primary energy consumption. Cold deck evaporator eliminates excess partial load cooling. Multiple complete refrigeration circuits for more partial load efficiency. Indoor condenser heat coil reduces requirement of primary heating energy. Multiple heat exchangers or two stage power gas burners for maximum load control and efficiency. Solid-state electronic control system reduces heat-cool differential. POWER SAVER® eliminates need for mechanical cooling at low outdoor air temperatures.

The DMS4 system is a complete Heat-Vent-Cool assembly (including condensing unit) of highly engineered, integrated components in a weatherproof, low silhouette single package. All necessary controls including a disconnect are factory installed and wired. All models are available with a choice of options including; gas or electric heat, roof mounting frames, POWER SAVER® fresh air control, exhaust dampers, blower drive and motor selection, return air blower, indoor condenser heat, thermostats, smoke detectors and remote readout panel. Air distribution is 11, 15 or 17 zone multizone control at the unit or double duct with independent mixing dampers at each zone. The DMS4 units make it possible to specify an entire rooftop multizone 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.

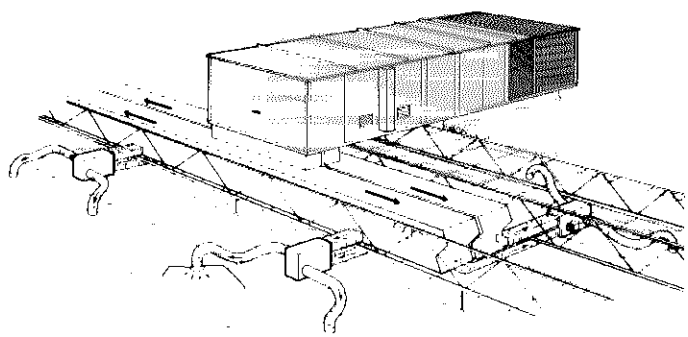
Equipment is shipped factory assembled. Lennox Direct Multizone System is covered by United States Patent Number 3,927,713. Cooling system has been tested and rated according to ARI Standard 360 test conditions. Blower data is from tests conducted in the Lennox Laboratory air test chamber. Gas models are AGA certified. Gas and electric models are CGA certified. The units and components within are bonded for grounding to meet safety standards for servicing required by NEC and CEC. Each unit is test operated at the factory to ensure dependable operation.

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

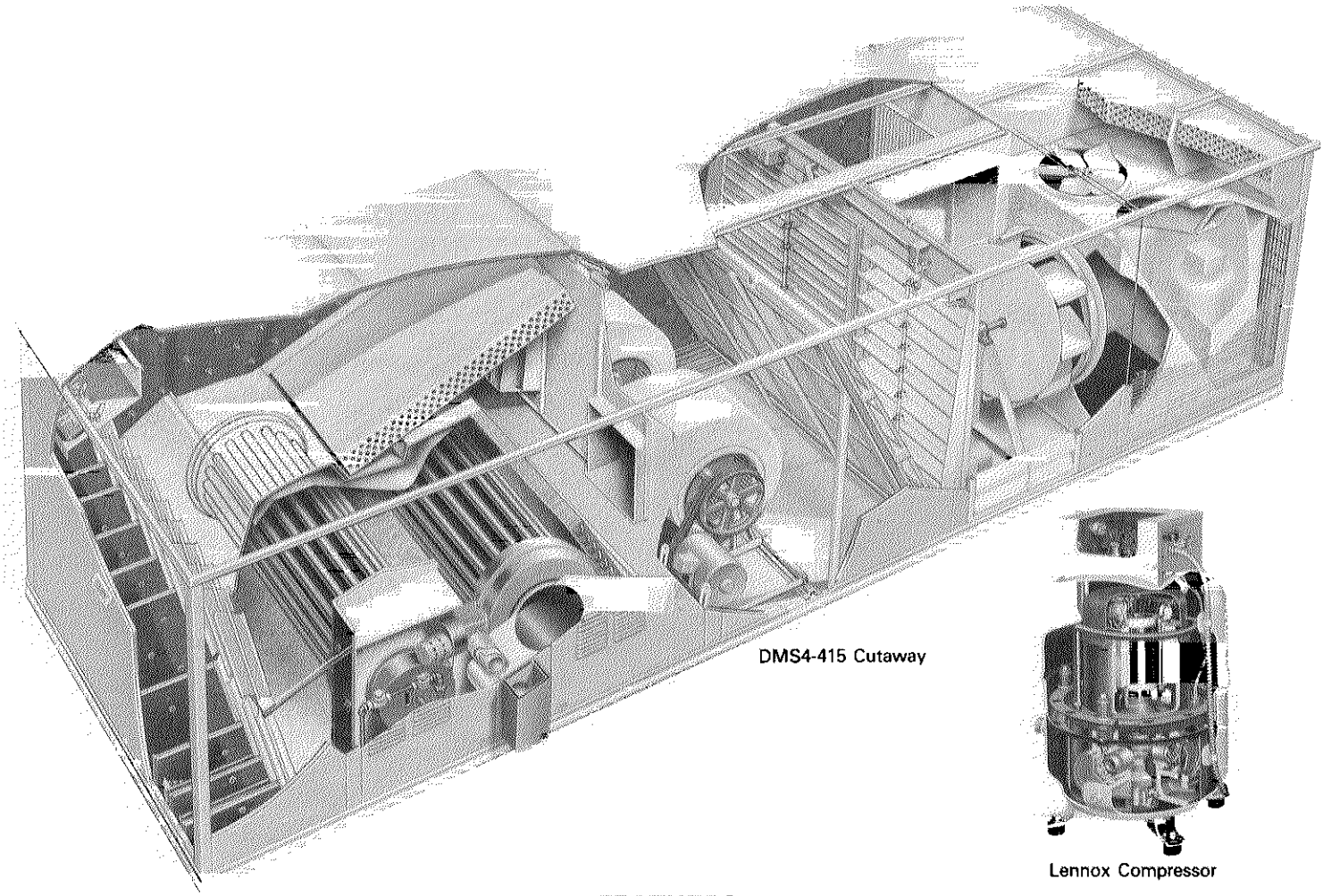
Typical Applications



Zone distribution system.
Mixing dampers located at unit



Double duct distribution system with zone damper boxes.
Mixing dampers remote from unit.



DMS4-415 Cutaway

Lennox Compressor

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Solid-State Electronic Control 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) for each zone, supply air sensor for each zone, load analyzer control module with zone circuit board and heat-cool logic control relays, zone damper actuator for each zone plus a mixed air/ventilation damper actuator with infinite resolution for blending outdoor air with return air. This system operates the unit equipment to automatically match its output to the load requirements with minimum space temperature variation. To accomplish this, the zone with the greatest cooling load will have its zone damper open full to the cold deck and will control the cold deck temperature to just match the load requirement in that zone. A cold deck modulating limit control regulates cooling operation to fit varying cooling load requirements. The zone with the greatest heating load will have its zone damper open full to the hot deck and will control the hot deck temperature to just match the load requirement in that zone. The other zones in the system (with their individual room temperature sensing transmitters and supply air sensors) will blend supply air to match the supply air temperature to the load in each individual zone. Also the system will often balance so that the same supply air temperature will be nearly right for each zone. The system can then "coast" with only the blowers operating for as long as the balanced condition continues. Should the load requirement in any zone change the controls will immediately respond to match supply air temperature to the load in that zone. In addition, when optional POWER SAVER and Condenser Heat are ordered, the right amount of outdoor air or indoor condenser coil heat is automatically furnished and utilized in the system to maintain temperature and minimize mechanical heating and cooling. With this control system troubleshooting is simple because the load analyzer signal transmitted by the room sensing transmitter reflects the load on the zone 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 unit. All zones of the system may be checked at one accessible point, the load analyzer control module.

Gas Heating — Lennox DURATUBE® heat exchanger (single or dual) is available in a choice of aluminized 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. Tube and drum construction permit normal heat element expansion and contraction without metal fatigue. Equipped with flame observation port and access provisions for ease of cleaning. Heat exchanger is life cycle tested in the Lennox Laboratory. Lennox designed power burner provides efficient, trouble free operation and is unaffected by adverse wind and atmospheric conditions. Burner is constructed of combination stainless and aluminized steel. 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 operating cycle including prepurge cycle. Burner is equipped with inspection window and air shutter to regulate combustion air. Limit controls and electronic flame proving and sensing controls are furnished for safe and reliable operation. 275,000 Btuh input models are available with a single stage burner. Two stage burner operation is available on 350,000 Btuh and 500,000 Btuh input models. 700,000 Btuh and 850,000 Btuh input models have dual heat exchangers. All controls are factory installed, piped, wired, tested and listed for operation down to -40°F outdoor air temperature.

Electric Heat — Available in 45 thru 150 Kw sizes. Helix wound nichrome heating elements are exposed directly in the hot deck air stream resulting in instant heat transfer, low coil temperatures and long service life. Elements are accurately located and insulated from the support frame by high quality insulators. Sequence controller brings the elements on 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 off setting (automatic reset) located in the heating section. In addition, heaters are equipped with high temperature thermal safety devices providing positive protection in the event of overheating. Also included is a modulating hot deck limit located in the heating section.

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Weatherproof Casing — Rugged cabinet construction provides maximum strength, resistance to stress and complete protection from the weather. The top and side panels are constructed of heavy gauge galvanized steel supported with rigid heavy gauge galvanized steel interior panels. All exterior panels have a durable finish coat of outdoor enamel. The top panels are sealed with rubber tubing in the bottom of each standing seam. Side panels are sealed with polyurethane foam. Base frame is constructed of extruded aluminum with heavy gauge galvanized steel support members. The entire bottom is a galvanized drain pan which traps and drains off moisture. All side and top panels are insulated with 1-1/2 inch thick (1-1/2 lb. density-mat faced) fiberglass insulation. In addition the base is insulated with 1 inch thick (6 lb. density) fiberglass insulation. All service access panels are equipped with locking type door handles. Heating, blower and filter access panels are hinged. Four heavy gauge steel lugs with hoisting sling are furnished. Installer has only to attach hoisting equipment to sling and place unit in desired location.

Disconnect Switch — Factory installed and conveniently located for ease of access. Eliminates field installation exterior to the unit and assures proper sizing.

Dependable Lennox Compressors — Multiple Lennox compressors give staging control to fit varying cooling load requirements. DMS4-185, DMS4-205 and DMS4-275 models are equipped with two Lennox single speed compressors and the DMS4-415 model has three. Reliable 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 balanced. Low clearance volume piston and cylinder yields increased volumetric efficiency. Strategically located discharge mufflers result in quiet operation. 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. A low ambient sensor prevents compressor operation below 22°F. High and low pressure controls (automatic reset) are located in the compressor control box. 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.

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.

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-edge aluminum fins fitted to durable copper tubes. Fins are equipped with flared collars that grip tubing for maximum contact area. Flared shoulder tubing connections and silver soldering provide tight, leakproof joints. Long life, durable copper tubing is easy to field service. Coil is thoroughly factory tested under high pressure to insure leakproof construction. The evaporator coil is row split with separate circuits. Each circuit has its own separate expansion valve, condensing coil section, compressor and refrigerant charge.

Condenser Section — Multiple direct drive fans move large air volumes uniformly through the large condenser coils resulting in high refrigerant cooling capacity. 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 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. Noncorrosive coated steel fan and condenser coil guards are furnished.

Powerful Supply Air Blowers — Twin centrifugal blowers 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 horsepower and drives is available. Motors are overload protected. Air velocity activated blower (sail) switch, installed in the blower scroll, prevents operation of the heating section in the event of supply air blower failure. Pressure converter mounted to the blower discharge snout uniformly distributes air and provides increased performance by converting the kinetic energy of the high velocity blower discharge to static pressure.

Return Air Blower — 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 horsepower and drives are available. 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.

Roof Mounting Frame — A rugged 14 inch National Roofing Contractors Association approved roof mounting frame exactly fits the perimeter of the unit. It is flashed into the roof and mates to the unit base where the base insulation completes the sealing and weatherproofing job. A 2 x 4 nailer is secured to the sides of the frame to facilitate flashing. Frame is shipped knocked down and is easily field assembled. MF3-26514 frame is available for DMS4-185-205-275 models and MF3-31614 for DMS4-415. See frame dimension drawing and installation detail sketch.

Optional Combustible Adaptor Frame — The adaptor is used when the MF3 roof mounting frame is installed on combustible material. The adaptor frame isolates the warm air plenum from combustible material. AF7-275 adaptor is available for DMS4-185-205-275 models and AF6-415 for DMS4-415.

Optional DMS1 Retrofit Roof Mounting Frame — Retrofit adapter frame is available for DMS4 model replacement of existing DMS1 unit installations. The retrofit frame adapts to the existing DMS1 frame and provides a weather sealed connection with minimum installation cost. Field assembled frame is shipped knocked down for ease of shipping and handling. Also available are zone head adapters. See specification table, dimension drawing and installation sketch.

Standard Frame Filters — One inch thick frame filters are furnished as standard. Media is washable or vacuum cleanable polyurethane coated with oil for increased efficiency. Use RP products coating No.418 (P-8-5069) for reoiling. Filter rack is sized to accept alternate two inch thick filters. Filters are easily accessible for servicing.

Thermostat Choice — Dual set point room thermostat (66C34) or transmitter (66C43) 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 integral sensor and installs in the conditioned space. For remote temperature control the transmitter installs outside the conditioned space with a remote sensor (69C79) in the conditioned area or a return air sensor (66C41) in the return air duct of the unit. Sensor must be ordered extra. Thermostat and transmitter are furnished with a wiring wallplate and may be installed horizontally or vertically. Both the thermostat and transmitter will mount on a field furnished standard 2 x 4 inch electrical outlet box. In addition, an optional thermostat guard (14F88) is available.

(Continued on next page)

FEATURES

Optional Power Saver Controls — Controls fresh air entry and "Free Cooling" with outdoor air. Outside and return air damper blades are provided with gaskets for tight seal and quiet operation. The formed dampers ride in nylon bearings. Structures that have high internal gains quite often require cooling at low outdoor air temperature. Lennox POWER SAVER eliminates the need for mechanical cooling at these temperatures by using outdoor air for cooling. Modulating limit control located in the cold deck, morning warm-up control located in return air stream, enthalpy control located in the outdoor air stream and Outside-Air-Discriminator regulate damper operation. The enthalpy control senses the total heat content of the outdoor air. This unique control prevents excessive moisture laden outdoor air that will add to the cooling load from entering the unit and yet permits cool dry air capable of cooling to enter, thus taking full advantage of outdoor air for free cooling. The POWER SAVER equipment may also be specified less controls with the dampers linked for manual operation. It is recommended electric heat units equipped with the POWER SAVER should have the Outside-Air-Discriminator and indoor condenser heat coil included in the system. 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.

ZC16 Zone Control System — 11, 15 or 17 zones located at the supply air end of the unit with the assembly matching the width of the unit. Zone dampers are designed to permit the hot and cold deck damper blades to operate independently. Zone dampers can be mechanically linked to be driven by a single modulating (non-spring return) damper actuator. 4 zones per actuator maximum. Two or more actuators may be electrically slaved together. Damper blades are equipped with rubber gaskets for tight seal and quiet operation.

Balancing Dampers — Located at each zone outlet in the unit. Permits manual system balance and lock in place after air adjustment is accomplished.

Double Duct — Discharge head is located within the unit. Hot and cold ducts run the length of building with branch lines feeding mixing boxes in each zone.

Optional Outside-Air-Discriminator T.M. Control — The energy saving Outside-Air Discriminator will automatically drive the POWER SAVER to the minimum position when the energy required to maintain the hot deck is greater than the energy input to operate the first stage of mechanical cooling. This will occur on a demand of 15 Kw for electric heat and first stage heat demand for gas heat. If cooling is still required to meet the cold deck demand, the first stage of mechanical cooling will be energized. The indoor condenser heat coil will be then available to meet the hot deck demand. When there is no hot deck demand, the POWER SAVER will cycle on the cold deck demand. Safety controls are furnished to provide necessary protection for compressors operating at low ambients.

Indoor Condenser Heat Coil — Condenser coil is required with Outside-Air-Discriminator. It is activated by the first stage of the heating controller when compressor number one is running. The coil is located in the hot deck and will provide heat as long as compressor number one is operating and there is a demand for heat. If compressor number one is not operating, the entire heating load is handled by the gas or electric components.

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

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 (3) Run supply and return air blowers, open outdoor air dampers and close return air damper. 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 foot. A key switch is provided for periodic test. Two detectors 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 (87A65 — one for each detector) may be provided which acts as a remote test station.

Optional Remote Readout Panel — RP2-1 Remote Readout Control Panel (BM2-5358) and RP2-00-1 Rough-In Box (BM1-5358) is available for all applications. From one centrally located spot within the structure the operation of the equipment can be checked at a glance. Signal lights on the panel indicate "System On", "Combustion Lockout", "Condensing Unit Inoperative" and "Dirty Filter". Check switches are provided to prove signal light operation. Two on-off switches control "System Auto-Off" and 'Condensing Unit Auto-Off" operation. Panel is equipped with a manually operated 12 hour clock timer. Timer overrides night setback controls providing normal operation for the time period set.

Optional Night Setback — Equipment is wired to receive night setback controls. In mild climates a manual system switch (not furnished), or automatic programming turns off the entire unit. For colder climates a night thermostat located in an average zone controls the conditioned area to a preset fuel saving temperature. Manual (BM-4762) or 12 hour timer (BM-4761) night setback kits are available to override existing night setback controls. The switch or timer is mounted on a plate which fits two standard electrical outlet boxes located in the wall. An optional skip-day clock timer (indoor/outdoor-12 hr. carryover) (06991) mounted in the unit programs the equipment. In addition, a 7 day time clock (indoor-outdoor) (52A39) and skip-a-day time clock (indoor) (06961) are also available as options.

Optional ZD8 Mixing Damper Boxes — Lennox mixing damper boxes are designed for double duct applications. The damper boxes are compact and fit easily into the space above suspended ceilings or any other convenient indoor location. The cabinet is constructed of heavy gauge cold rolled steel with a baked-on enamel finish. The interior is lined with neoprene coated fiberglass insulation. Hot and cold deck damper blades rotate smoothly and silently on nylon bearings. The mixing damper blades are linked together to coordinate hot and cold deck supply air resulting in exact temperature control. Flanges are provided on the inlet end for hot and cold deck duct connections. Supply outlet duct connection(s) can be made at the end, top, bottom or sides of the damper box, depending on the application. Damper boxes are shipped factory assembled. Damper boxes are equipped with a factory installed solid-state damper actuator and 24 volt transformer. A supply air sensor is also furnished. If application requires more than 12 zones (24 maximum) a Zone Adder Module (66C46) is required and must be ordered extra.

SPECIFICATIONS AND RATINGS

Model No.				DMS4-185	DMS4-205	DMS4-275	DMS4-415
Cooling Capacity	At ARI Standard 360 Test Conditions		Total capacity (Btuh)	196,000	210,000	278,000	406,000
			S/T ratio	.77	.80	.77	.74
			Compressor watts	19,600	20,400	27,900	40,500
Condenser Coils	Net face area (sq. ft.)			(2) — 12.6	(2) — 12.6	(2) — 12.6	(3) — 11.7
	Tube diameter & No. of rows			3/8 — 2	3/8 — 2	3/8 — 4	3/8 — 4
	Fins per inch			18	18	18	18
Condenser Fans	Diameter (in.) & No. of blades			(2) — 26 — 5	(2) — 26 — 5	(2) — 26 — 5	(3) — 26 — 5
	Total air volume (cfm)			15,400	13,600	13,600	20,000
	Motor hp			(2) — 1	(2) — 1	(2) — 1	(3) — 1
	Watts input (total)			2,800	2,800	2,800	4230
Evaporator Coil	Net face area (sq. ft.)			15.3	15.3	15.3	33.8
	Tube diameter (in.) — No. of rows			1/2 — 4	1/2 — 6	1/2 — 6	1/2 — 4
	Fins per inch			13	13	13	13
Indoor condenser heat capacity (Btuh)				110,000	115,000	150,000	170,000
Indoor Condenser Heat Coil	Net face area (sq. ft.)			10.4	10.4	10.4	15.6
	Tube diameter (in.) — No. of rows			3/8 — 3	3/8 — 3	3/8 — 3	3/8 — 2
	Fins per inch			13	13	13	13
Heating Options	Gas Heating Capacity Natural	Single Stage	Btuh Input	275,000			----
			Btuh Output	206,250			----
		Two Stage	Btuh Input (low)	350,000			350,000
			Btuh Output (low)	262,500			262,500
			Btuh Input (high)	500,000			500,000
			Btuh Output (high)	375,000			375,000
		Dual Heat Exchangers	Btuh Input	700,000			700,000
							850,000
			Btuh Output	525,000			525,000
							637,500
	†Electric Heating Capacity Range (Btuh)		45 kW	115,300-153,500			----
			60 kW	153,500-204,600			----
			75 kW	191,800-255,800			----
			90 kW	230,200-306,900			230,200-306,900
			105 kW	----			268,500-358,000
			120 kW	----			306,900-409,200
			135 kW	----			345,300-460,400
			150 kW	----			383,600-511,500
Air filters no. & size (in.)				(3) 20 x 20 x 1 (5) 20 x 25 x 1			(6) 20 x 20 x 1 (6) 20 x 25 x 1
Supply Air Blower	Blower wheel nominal diameter x width (in.)			(2) — 15 x 15			(2) — 18 x 18
	Motor horsepower options			5 — 7-1/2 — 10			7-1/2 — 10 — 15
Return Air Blower	Wheel diameter (in.)			40 — backward curved blades			
	Motor horsepower options			1-1/2 — 3			3 — 5 — 7-1/2
Roof mounting frame				MF3-26514			MF3-31614
Combustible adaptor frame				AF7-275			AF6-415
DMS1 Retrofit Roof Mounting Frame	Roof mounting adapter frame			MFA3-265			----
	Adapts double duct DMS4 frame to double duct DMS1 frame.			MF3-DD-265			----
	DMS4 to DMS1 adapter for 8 zone DMS1 head			MF3-ZH8-265			----
	DMS4 to DMS1 adapter for 12 zone DMS1 head			MF3-ZH12-265			----
Gas piping connection IPS (in.)				1-1/4			1-1/4
Condensate drain connection IPM (in.)				1-1/4			1-1/4
Electrical characteristics				208 to 575 volt — 60 hz — 3 phase			

†See electric heat rating table for capacities at various voltages.

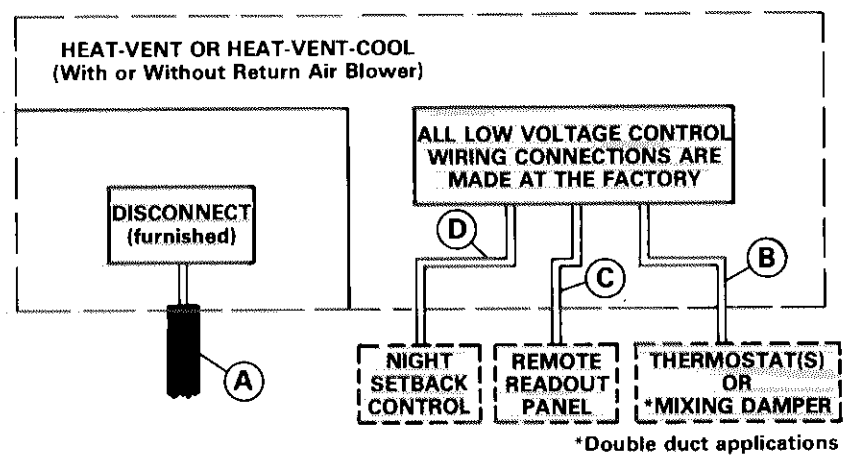
ELECTRIC HEAT RATINGS

Unit Model No.	Elements	No. of Steps	Volts Input	208V	220/240V	440/480V	550/600V
DMS4-185 DMS4-205 DMS4-275	3	6	Kw Input	33.8	37.7/45.0	37.7/45.0	37.7/45.0
			Btuh Output	115,300	128,000/153,500	128,000/153,000	128,000/153,000
	4	8	Kw Input	45.0	50.5/60.0	50.5/60.0	50.5/60.0
			Btuh Output	153,500	169,800/204,600	169,800/204,600	169,800/204,600
	5	10	Kw Input	56.3	63.0/75.0	63.0/75.0	63.0/75.0
			Btuh Output	191,800	212,300/255,800	212,300/255,800	212,300/255,800
DMS4-185-205-275 DMS4-415	6	12	Kw Input	67.5	75.6/90.0	75.6/90.0	75.6/90.0
			Btuh Output	230,200	254,700/306,900	254,700/306,900	254,700/306,900
DMS4-415	7	14	Kw Input	78.8	88.4/105.0	88.4/105.0	88.4/105.0
			Btuh Output	268,500	297,200/358,000	297,200/358,000	297,200/358,000
	8	16	Kw Input	90.0	101.0/120.0	101.0/120.0	101.0/120.0
			Btuh Output	306,900	339,600/409,200	339,600/409,200	339,600/409,200
	9	17	Kw Input	101.3	113.6/135.0	113.6/135.0	113.6/135.0
			Btuh Output	345,300	382,100/460,400	382,100/460,400	382,100/460,400
	10	18	Kw Input	112.5	126.1/150.0	126.1/150.0	126.1/150.0
			Btuh Output	383,600	424,500/511,500	424,500/511,500	424,500/511,500

NOTE – Ratings do not include blower motor heat.

FIELD WIRING

NOTE — Correct size unit disconnect is furnished and factory installed.



A – Single power supply — 3 wires minimum (For 208, 230, 460 and 575 volt models)

B — 4 wire low voltage (From terminal strip to room temperature sensing transmitter [Thermostat].)
3 wire low voltage 1 signal wire to each transmitter [Thermostat]. 2 power supply wires, 24 VDC.
(When double duct mixing boxes with electronic load analyzer are used.)

C – 11 wire low voltage (From terminal strip to optional remote readout control panel.)

D — 2 wire low voltage (From terminal strip to night setback or system switch.)

NOTE — All wiring must be in accordance with regulations of the National Electrical Code (NEC) or Canadian Electrical Code (CEC) and other appropriate governing bodies.

Field wiring is not furnished –

ELECTRICAL DATA

DMS4-185 & DMS4-205 DX COOLING AND ELECTRIC HEAT

Voltage (three phase)			208V	230V	460V	575V
Compressors		Rated load amps (each)	31.8	31.8	14.6	11.9
		Locked rotor amps (each)	185.0	185.0	93.0	76.0
Condenser Fan Motors		Full load amps (each)	4.7	4.3	2.2	1.7
		Horsepower	(2) — 1	(2) — 1	(2) — 1	(2) — 1
Supply Air Blower Motor	5 hp	Full load amps	16.7	15.2	7.6	6.1
		Locked rotor amps	101.0	92.0	46.0	37.0
	7-1/2 hp	Full load amps	24.2	22.0	11.0	9.0
		Locked rotor amps	154.7	150.0	75.0	56.0
	10 hp	Full load amps	30.8	28.0	14.0	11.0
		Locked rotor amps	194.0	175.0	87.5	70.0
Return Air Blower Motor	1-1/2 hp	Full load amps	5.7	5.2	2.6	2.1
		Locked rotor amps	44.0	31.6	15.8	12.8
	3 hp	Full load amps	10.6	9.6	4.8	3.9
		Locked rotor amps	70.0	64.0	32.0	26.0
2 KVA transformer full load amps (all models)			9.6	8.7	4.4	3.5
Electric heat full load amps/element			31.3	36.1	18.0	14.4
Unit power factor			.88	.88	.88	.88

DMS4-185 AND DMS4-205
ELECTRIC HEAT & DX COOLING — DX COOLING & GAS HEAT

Voltage (Three Phase)	Heating-Cooling Option		MINIMUM CIRCUIT AMPACITY WITHOUT RETURN AIR BLOWER			MINIMUM CIRCUIT AMPACITY WITH RETURN AIR BLOWER					
			Supply Air Blower Motor hp			5 hp Supply Air Blower Motor		7-1/2 hp Supply Air Blower Motor		10 hp Supply Air Blower Motor	
						Return Air Blower Motor hp		Return Air Blower Motor hp		Return Air Blower Motor hp	
			5	7-1/2	10	1-1/2	3	1-1/2	3	1-1/2	3
208V	Electric Heat & DX Cooling	45 kW	151.2	158.7	165.5	156.9	161.8	164.4	169.3	171.2	176.1
		60 kW	186.9	196.3	204.6	192.6	197.5	202.0	206.9	210.3	215.2
		75 kW	226.0	235.4	243.7	231.7	236.6	241.1	246.0	249.4	254.3
		90 kW	265.2	274.6	282.9	270.9	275.8	280.3	285.2	288.6	293.5
	DX Cooling & Gas Heat		112.1	119.6	126.2	117.8	122.7	125.3	130.2	131.9	136.8
230V	Electric Heat & DX Cooling	45 kW	163.1	171.6	179.1	168.3	172.7	176.8	181.2	184.3	188.7
		60 kW	208.2	216.7	224.2	213.4	217.8	221.9	226.3	229.4	233.8
		75 kW	253.3	261.8	269.3	258.5	262.9	267.0	271.4	274.5	278.9
		90 kW	300.6	309.1	316.6	307.1	312.6	315.6	321.1	323.1	328.6
	DX Cooling & Gas Heat		108.5	115.3	121.3	113.7	118.1	120.5	124.9	126.5	130.9
460V	Electric Heat & DX Cooling	45 kW	81.4	85.7	89.4	84.0	86.2	88.3	90.5	92.0	94.2
		60 kW	103.9	108.2	111.9	106.5	108.7	110.8	113.0	114.5	116.7
		75 kW	127.5	131.5	135.5	130.8	133.5	135.0	137.8	138.8	141.5
		90 kW	150.0	154.3	158.0	153.3	156.0	157.5	160.3	161.3	164.0
	DX Cooling & Gas Heat		51.4	54.8	57.8	54.0	56.2	57.4	59.6	60.4	62.6
575V	Electric Heat & DX Cooling	45 kW	65.1	68.7	71.3	67.2	69.0	70.8	72.6	73.4	75.2
		60 kW	83.1	86.7	89.3	85.2	87.0	88.8	90.6	91.4	93.2
		75 kW	101.1	104.7	107.3	103.2	105.0	106.8	108.6	109.4	111.2
		90 kW	119.1	122.7	125.3	121.2	123.0	124.8	126.6	127.4	129.2
	DX Cooling & Gas Heat		41.6	44.6	46.5	43.7	45.5	46.6	48.4	48.6	50.4

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

ELECTRICAL DATA

DMS4-275 DX COOLING AND ELECTRIC HEAT

Voltage (three phase)			208V	230V	460V	575V
Compressors		Rated load amps (each)	46.7	46.7	22.8	16.5
		Locked rotor amps (each)	240.0	240.0	128.0	92.0
Condenser Fan Motors		Full load amps (each)	4.7	4.3	2.2	1.7
		Horsepower	(2) — 1	(2) — 1	(2) — 1	(2) — 1
Supply Air Blower Motor	5 hp	Full load amps	16.7	15.2	7.6	6.1
		Locked rotor amps	101.0	92.0	46.0	37.0
	7-1/2 hp	Full load amps	24.2	22.0	11.0	9.0
		Locked rotor amps	154.7	150.0	75.0	56.0
	10 hp	Full load amps	30.8	28.0	14.0	11.0
		Locked rotor amps	194.0	175.0	87.5	70.0
Return Air Blower Motor	1-1/2 hp	Full load amps	5.7	5.2	2.6	2.1
		Locked rotor amps	44.0	31.6	15.8	12.8
	3 hp	Full load amps	10.6	9.6	4.8	3.9
		Locked rotor amps	70.0	64.0	32.0	26.0
2 KVA transformer full load amps (all models)			9.6	8.7	4.4	3.5
Electric heat full load amps/element			31.3	36.1	18.0	14.4
Unit power factor			.88	.88	.88	.88

DMS4-275
ELECTRIC HEAT & DX COOLING — DX COOLING & GAS HEAT

Voltage (Three Phase)	Heating-Cooling Option		MINIMUM CIRCUIT AMPACITY WITHOUT RETURN AIR BLOWER			MINIMUM CIRCUIT AMPACITY WITH RETURN AIR BLOWER					
			Supply Air Blower Motor hp			5 hp Supply Air Blower Motor		7-1/2 hp Supply Air Blower Motor		10 hp Supply Air Blower Motor	
						Return Air Blower Motor hp		Return Air Blower Motor hp		Return Air Blower Motor hp	
			5	7-1/2	10	1-1/2	3	1-1/2	3	1-1/2	3
208V	Electric Heat & DX Cooling	45 kW	184.7	192.2	198.8	190.4	195.3	197.9	202.8	204.5	209.4
		60 kW	186.9	196.3	204.6	192.6	197.5	202.0	206.9	210.3	215.2
		75 kW	226.0	235.4	243.7	231.7	236.6	241.1	246.0	249.4	254.3
		90 kW	265.2	274.6	282.9	270.9	275.8	280.3	285.2	288.6	293.5
	DX Cooling & Gas Heat		145.6	153.1	159.7	151.3	156.2	158.8	163.7	165.4	170.3
230V	Electric Heat & DX Cooling	45 kW	187.1	193.9	199.9	192.3	196.7	199.1	203.5	205.1	209.5
		60 kW	208.2	216.7	224.2	213.4	217.8	221.9	226.3	229.4	233.8
		75 kW	253.3	261.8	269.3	258.5	262.9	267.0	271.4	274.5	278.9
		90 kW	300.6	309.1	316.6	307.1	312.6	315.6	321.1	323.1	328.6
	DX Cooling & Gas Heat		142.0	148.8	154.8	147.2	151.6	154.0	158.4	160.0	164.4
460V	Electric Heat & DX Cooling	45 kW	92.4	95.8	98.8	95.0	97.2	98.4	100.6	101.4	103.6
		60 kW	103.9	108.2	111.9	106.5	108.7	110.8	113.0	114.5	116.7
		75 kW	127.5	131.5	135.5	130.8	133.5	135.0	137.8	138.8	141.5
		90 kW	150.0	154.3	158.0	153.3	156.0	157.5	160.3	161.3	164.0
	DX Cooling & Gas Heat		69.9	73.3	76.3	72.5	74.7	75.9	78.1	78.9	81.1
575V	Electric Heat & DX Cooling	45 kW	69.9	72.8	74.8	72.0	73.8	74.9	76.7	76.9	78.7
		60 kW	83.1	86.7	89.3	85.2	87.0	88.8	90.6	91.4	93.2
		75 kW	101.1	104.7	107.3	103.2	105.0	106.8	108.6	109.4	111.2
		90 kW	119.1	122.7	125.3	121.2	123.0	124.8	126.6	127.4	129.2
	DX Cooling & Gas Heat		51.9	54.8	56.8	54.0	55.8	56.9	58.7	58.9	60.7

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

ELECTRICAL DATA

DMS4-415 DX COOLING AND ELECTRIC HEAT

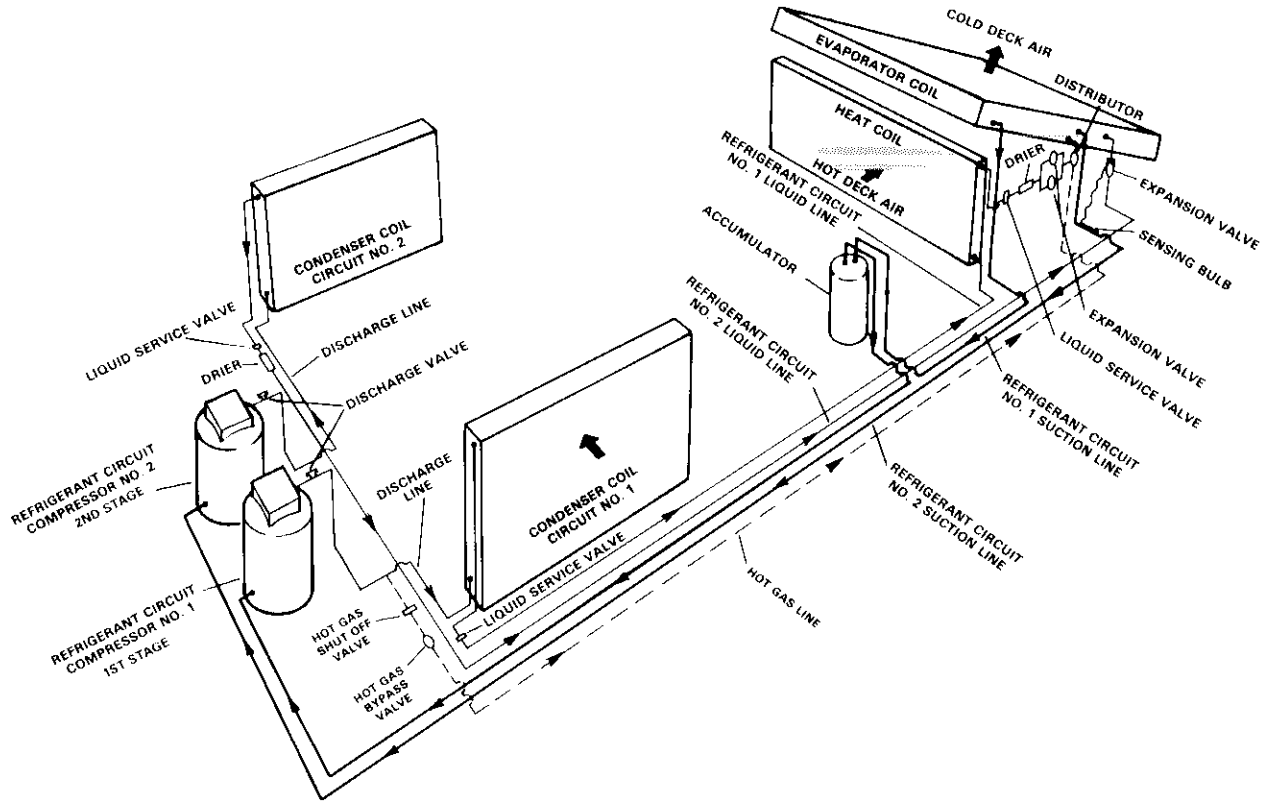
Voltage (three phase)			208V	230V	460V	575V
Compressors		Rated load amps (each)	46.7	46.7	22.8	16.5
		Locked rotor amps (each)	240.0	240.0	128.0	92.0
Condenser Fan Motors		Full load amps (each)	4.7	4.3	2.2	1.7
		Horsepower	(3) — 1	(3) — 1	(3) — 1	(3) — 1
Supply Air Blower Motor	7-1/2 hp	Full load amps	24.2	22.0	11.0	9.0
		Locked rotor amps	155.0	150.0	75.0	56.0
	10 hp	Full load amps	30.8	28.0	14.0	11.0
		Locked rotor amps	194.0	175.0	88.0	70.0
	15 hp	Full load amps	46.2	42.0	21.0	17.0
		Locked rotor amps	264.0	240.0	120.0	96.0
Return Air Blower Motor	3 hp	Full load amps	10.6	9.6	4.8	3.9
		Locked rotor amps	70.0	64.0	32.0	26.0
	5 hp	Full load amps	16.7	15.2	7.6	6.1
		Locked rotor amps	101.0	92.0	46.0	37.0
	7-1/2 hp	Full load amps	24.2	22.0	11.0	9.0
		Locked rotor amps	155.0	150.0	75.0	56.0
2 KVA transformer full load amps (all models)			9.6	8.7	4.4	3.5
Electric heat full load amps/element			31.3	36.1	18.0	14.4
Unit power factor			.88	.88	.88	.88

DMS4-415
ELECTRIC HEAT & DX COOLING — DX COOLING & GAS HEAT

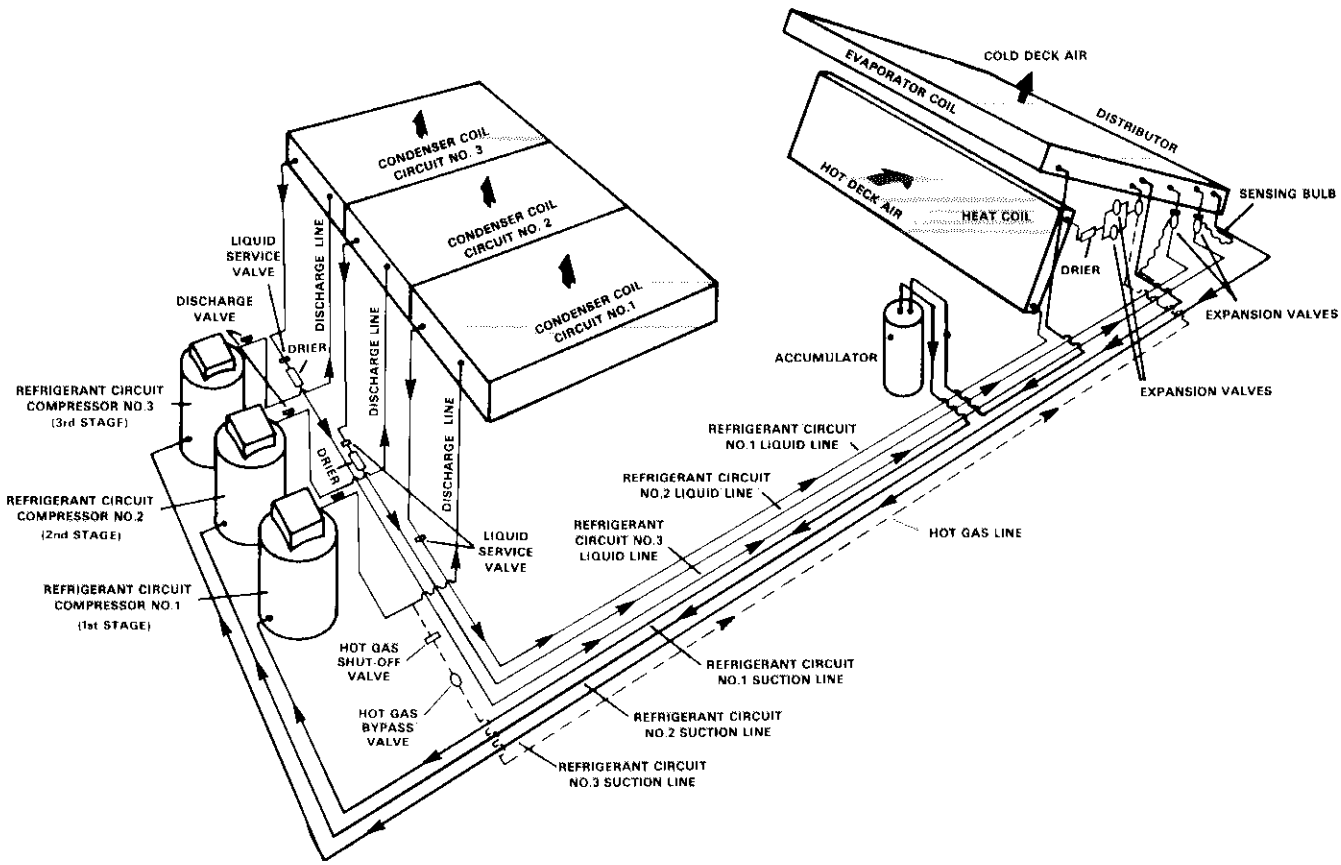
Voltage (Three Phase)	Heating-Cooling Option		MINIMUM CIRCUIT AMPACITY WITHOUT RETURN AIR BLOWER			MINIMUM CIRCUIT AMPACITY WITH RETURN AIR BLOWER						
			Supply Air Blower Motor hp			7-1/2 hp Supply Air Blower Motor		10 hp Supply Air Blower Motor		15 hp Supply Air Blower Motor		
						Return Air Blower Motor hp		Return Air Blower Motor hp		Return Air Blower Motor hp		
			7-1/2	10	15	3	5	3	5	3	5	7-1/2
208V	Electric Heat & DX Cooling	90 kW	274.6	282.9	302.2	285.2	291.3	293.5	299.6	312.8	318.9	326.4
		105 kW	316.3	324.5	343.7	329.5	355.1	337.7	345.4	357.0	364.6	374.0
		120 kW	355.4	363.6	382.8	368.6	376.2	376.8	384.5	396.1	403.7	413.1
		135 kW	394.5	402.7	421.9	407.7	415.3	415.9	423.6	435.2	442.8	452.2
		150 kW	433.6	441.8	461.0	446.8	454.4	455.0	462.4	474.3	477.6	----
	DX Cooling & Gas Heat		199.7	206.3	221.7	209.9	216.4	216.9	223.0	232.3	238.4	245.9
230V	Electric Heat & DX Cooling	90 kW	309.2	316.7	334.1	321.2	328.2	328.6	335.6	346.1	353.1	361.6
		105 kW	354.3	361.8	379.2	366.3	373.3	373.7	380.7	391.2	398.2	406.7
		120 kW	399.4	406.9	424.4	411.4	418.4	418.8	425.8	436.4	443.4	451.8
		135 kW	444.5	452.0	469.5	456.5	463.5	464.0	478.3	481.5	487.8	----
		150 kW	489.6	497.1	514.6	501.6	508.6	509.1	523.4	526.6	532.9	542.0
	DX Cooling & Gas Heat		195.4	201.4	215.4	205.0	210.6	211.0	216.6	225.0	230.6	237.4
460V	Electric Heat & DX Cooling	90 kW	154.3	158.0	166.7	160.3	163.7	164.0	167.5	172.7	176.3	180.5
		105 kW	176.8	180.5	189.2	182.8	186.2	186.5	190.0	195.2	198.8	202.9
		120 kW	199.3	203.0	211.7	205.3	208.7	209.0	212.5	217.7	221.3	225.4
		135 kW	221.8	225.5	234.2	227.8	231.2	231.5	235.0	240.2	243.8	247.9
		150 kW	244.3	248.0	256.7	250.3	253.9	254.0	257.5	262.7	266.3	270.4
	DX Cooling & Gas Heat		96.1	99.1	106.1	100.9	103.7	103.9	106.7	110.9	113.7	117.1
575V	Electric Heat & DX Cooling	90 kW	122.7	125.3	132.7	126.6	128.8	129.2	131.4	136.6	138.8	141.7
		105 kW	141.6	144.1	151.6	146.5	149.2	149.0	151.8	156.5	159.2	162.7
		120 kW	159.6	162.1	169.6	164.5	167.2	167.0	169.8	174.5	177.2	180.7
		135 kW	177.6	180.1	187.6	182.5	185.2	185.0	187.8	192.5	195.2	198.7
		150 kW	195.6	198.0	205.6	200.5	203.2	203.0	205.8	210.5	213.2	216.7
	DX Cooling & Gas Heat		71.2	73.2	79.2	75.1	77.3	77.1	79.3	83.1	85.3	88.2

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

DMS4-185-205-275 REFRIGERANT PIPING



DMS4-415 REFRIGERANT PIPING



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 9.

DMS4-185 COOLING CAPACITY

Evaporator 80F Dry Bulb		Outdoor Air Temperature Entering Condenser Coil (F)											
		85			95			105			115		
Entering Wet Bulb (F)	Air Volume (cfm)	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
63	6000	188,000	.88	17,200	177,000	.91	18,500	167,000	.94	19,900	157,000	.98	21,100
	6750	191,000	.92	17,400	180,000	.94	18,700	170,000	.98	20,100	159,000	1.00	21,300
	7500	194,000	.95	17,600	182,000	.99	18,900	172,000	1.00	20,300	161,000	1.00	21,500
67	6000	202,000	.70	18,000	191,000	.72	19,300	180,000	.74	20,800	169,000	.76	22,000
	6750	206,000	.73	18,200	194,000	.75	19,500	183,000	.77	21,000	172,000	.80	22,300
	7500	209,000	.75	18,400	196,000	.78	19,700	186,000	.80	21,200	175,000	.83	22,500
71	6000	217,000	.54	18,800	205,000	.55	20,100	194,000	.57	21,700	182,000	.58	23,000
	6750	221,000	.56	19,000	208,000	.57	20,300	197,000	.59	21,900	185,000	.60	23,300
	7500	224,000	.57	19,200	211,000	.59	20,500	200,000	.60	22,100	187,000	.62	23,500

DMS4-205 COOLING CAPACITY

Evaporator 80F Dry Bulb		Outdoor Air Temperature Entering Condenser Coil (F)											
		85			95			105			115		
Entering Wet Bulb (F)	Air Volume (cfm)	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
63	6000	199,000	.90	17,900	187,000	.93	19,100	176,000	.96	20,500	165,000	1.00	21,700
	6750	203,000	.94	18,100	191,000	.97	19,300	180,000	1.00	20,700	168,000	1.00	22,000
	7500	206,000	.98	18,300	194,000	1.00	19,500	183,000	1.00	20,900	170,000	1.00	22,200
67	6000	215,000	.71	18,700	202,000	.73	20,000	191,000	.75	21,500	179,000	.78	22,800
	6750	220,000	.74	18,900	206,000	.77	20,200	195,000	.79	21,700	182,000	.82	23,000
	7500	224,000	.77	19,100	210,000	.80	20,400	200,000	.82	22,000	186,000	.85	23,300
71	6000	230,000	.55	19,400	217,000	.56	20,800	205,000	.58	22,400	192,000	.59	23,700
	6750	236,000	.57	19,700	221,000	.58	21,000	209,000	.60	22,700	196,000	.62	24,000
	7500	240,000	.59	19,900	225,000	.60	21,200	213,000	.62	22,900	199,000	.64	24,200

DMS4-275 COOLING CAPACITY

Evaporator 80F Dry Bulb		Outdoor Air Temperature Entering Condenser Coil (F)											
		85			95			105			115		
Entering Wet Bulb (F)	Air Volume (cfm)	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
63	8800	269,000	.91	24,800	254,000	.95	26,400	238,000	.98	28,000	225,000	1.00	29,800
	9900	273,000	.96	25,100	258,000	.99	26,600	242,000	1.00	28,200	228,000	1.00	30,000
67	8800	290,000	.73	26,000	274,000	.75	27,700	258,000	.77	29,300	243,000	.79	31,100
	9900	294,000	.75	26,300	278,000	.77	27,900	261,000	.80	29,500	246,000	.83	31,300
71	8800	310,000	.56	27,100	293,000	.57	28,900	276,000	.59	30,400	261,000	.60	32,200
	9900	315,000	.58	27,400	297,000	.59	29,100	281,000	.61	30,700	264,000	.63	32,500

DMS4-415 COOLING CAPACITY

Evaporator 80F Dry Bulb		Outdoor Air Temperature Entering Condenser Coil (F)											
		85			95			105			115		
Entering Wet Bulb (F)	Air Volume (cfm)	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
63	12,000	390,900	.87	36,000	369,900	.90	38,310	351,000	.92	40,800	327,000	.96	44,250
	13,500	397,500	.91	36,450	376,500	.94	38,610	357,000	.97	41,250	332,100	1.00	44,550
	15,000	403,500	.95	36,810	382,500	.98	39,000	362,100	1.00	41,550	336,000	1.00	44,850
67	12,000	421,500	.69	37,800	399,000	.71	40,050	378,000	.73	42,750	353,000	.77	46,050
	13,500	429,000	.72	38,100	405,900	.74	40,500	385,500	.76	43,200	359,100	.79	46,500
	15,000	435,000	.74	38,400	411,900	.77	40,800	390,000	.78	43,800	363,000	.82	46,800
71	12,000	453,000	.54	39,300	429,000	.55	41,790	406,500	.56	44,700	379,500	.58	48,000
	13,500	460,500	.55	39,750	438,000	.57	42,150	412,500	.58	45,150	385,500	.60	48,390
	15,000	468,000	.57	40,110	444,000	.58	42,450	418,500	.60	45,510	390,000	.62	48,750

BLOWER DATA

BLOWER DRIVE SELECTION

Using total air volume (cfm) and system Static Pressure External to Unit (inches water gauge) requirements determine from Blower Performance Chart Rpm and Bhp required for job. Specify Bhp, exact Rpm and power characteristics required when ordering. The correct motor and pulleys will be factory installed. The following tables list Motor hp and Rpm range of the drive setups available with each motor.

RETURN AIR BLOWER

Unit Model No.	Nominal Motor Hp	Maximum Usable Hp	Rpm Range Of All Available Drive Setups
DMS4-185	1-1/2	1.72	330-430
DMS4-205			
DMS4-275	3	3.45	445-545
DMS4-415	3	3.45	445-545
	5	5.75	550-665
	7-1/2	8.62	660-795

SUPPLY AIR BLOWER

Unit Model No.	Nominal Motor Hp	Maximum Usable Hp	Rpm Range Of All Available Drive Setups
DMS4-185	5	5.75	595-925
DMS4-205	7-1/2	8.63	825-1175
DMS4-275	10	11.5	*960 — 1030 — 1095 — 1160
DMS4-415	7-1/2	8.63	680-900
	10	11.5	*725 — 780 — 835 — 890
	15	17.25	*870 — 910 — 950 — 1110

NOTE — The maximum usable hp of motors furnished by Lennox are shown in table. If other motors of comparable hp are used be sure to keep within the service factory limitations outlined on the motor nameplate. In Canada nominal horsepower is maximum usable horsepower.

*Fixed pulley at rpm increments shown.

NOTE - Specify exact Bhp, Rpm and power characteristics required when ordering.

MINIMUM HORSEPOWER REQUIREMENTS AS REQUIRED BY A.G.A.

Unit Model No.	Gas Input (Btuh)	Minimum Supply Air Blower Motor Required	*Minimum Return Air Blower Motor Required
DMS4-185	275,000-350,000	5 hp	1-1/2 hp
DMS4-205	500,000	5 hp	1-1/2 hp
DMS4-275	700,000	7-1/2 hp	1-1/2 hp
DMS4-415	350,000	7-1/2 hp	3 hp
	500,000	7-1/2 hp	3 hp
	700,000	7-1/2 hp	3 hp
	850,000	10 hp	3 hp

*Return air blower is optional and not required in all applications.

DMS4-185-205-275 SUPPLY AIR BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																					
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.25		1.50	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	----		----		615	1.5	660	1.7	700	1.9	730	2.1	765	2.3	795	2.5	830	2.7	860	3.0	----	----
6500	----		610	1.6	650	1.8	685	2.1	725	2.3	755	2.5	785	2.7	820	2.9	850	3.1	880	3.3	----	----
7000	605	1.7	640	2.0	680	2.2	715	2.5	750	2.7	780	2.9	810	3.1	845	3.3	875	3.5	905	3.7	----	----
7500	645	2.0	675	2.3	710	2.5	740	2.8	775	3.1	805	3.3	840	3.5	870	3.7	900	4.0	930	4.2	----	----
8000	680	2.5	710	2.7	745	3.0	775	3.2	805	3.5	835	3.7	865	4.0	895	4.2	925	4.5	955	4.7	1025	5.4	----	----
8500	720	3.0	750	3.2	780	3.5	805	3.7	835	4.0	865	4.2	895	4.5	920	4.8	950	5.0	980	5.3	1045	6.0	----	----
9000	755	3.4	785	3.7	810	3.9	840	4.2	870	4.4	900	4.7	925	5.0	950	5.4	980	5.7	1005	6.0	1080	6.7	1130	7.6
9500	790	3.9	815	4.2	845	4.4	870	4.7	900	4.9	925	5.2	955	5.6	980	5.9	1010	6.3	1035	6.6	1105	7.4	1160	8.3
10,000	825	4.4	850	4.7	880	4.9	905	5.2	930	5.4	955	5.7	980	6.1	1010	6.5	1035	6.8	1060	7.2	1130	8.2	1190	9.1

NOTE — The above chart is based on the maximum hp condition of zone dampers in the intermediate position, standard frame filters and 20% outside air. Return air blower is not included. For full cooling or full heating, cfm will be reduced approximately 10% with 1 heat exchanger, electric heat or 4 row coil or 20% with 2 heat exchangers, or 6 row coil.

DMS4-185-205-275 RETURN AIR BLOWER PERFORMANCE (1-1/2 And 3 hp Motors)

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT — (Inches Water Gauge)											
	0		.10		.20		.30		.40		.50	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5000	----	----	----	----	----	----	345	.8	380	1.0	415	1.3
5500	----	----	----	----	330	.7	360	.9	395	1.1	430	1.5
6000	----	----	----	----	345	.8	375	1.0	410	1.2	440	1.6
6500	----	----	330	.7	360	.9	390	1.2	425	1.3	455	1.7
7000	----	----	350	.8	375	1.0	405	1.3	440	1.5	470	1.8
7500	----	----	365	.9	390	1.2	420	1.5	455	1.7	485	2.0
8000	340	.7	375	1.0	410	1.3	440	1.6	470	1.9	500	2.2
8500	365	.9	390	1.2	425	1.5	455	1.8	490	2.2	515	2.5
9000	385	1.0	405	1.3	445	1.6	475	2.0	505	2.4	530	2.7
9500	405	1.3	430	1.6	460	1.9	490	2.2	515	2.6	540	2.9
10,000	430	1.5	455	1.8	480	2.1	505	2.4	530	2.7	555	3.1

BLOWER DATA

DMS4-415 SUPPLY AIR BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	.30		.40		.50		.60		.70		.80		.90		1.00		1.25		1.50		1.75	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
9000	----		540	2.4	570	2.7	595	3.0	620	3.2	650	3.5	675	3.7	700	4.0	----		----		----	
9500	530	2.5	560	2.7	590	3.0	615	3.3	640	3.5	665	3.8	690	4.0	715	4.3	----		----		----	
10,000	550	2.8	575	3.1	605	3.4	630	3.7	655	3.9	680	4.2	705	4.4	730	4.7	790	5.6	----		----	
10,500	570	3.2	600	3.5	625	3.8	650	4.1	675	4.4	700	4.6	720	4.9	745	5.2	805	6.1	----		----	
11,000	590	3.7	615	3.9	640	4.2	665	4.5	690	4.8	710	5.1	740	5.4	760	5.7	820	6.7	870	7.7	----	
11,500	610	4.1	635	4.4	660	4.6	685	4.9	705	5.2	730	5.6	750	5.9	775	6.2	830	7.2	880	8.2	----	
12,000	630	4.6	655	4.9	680	5.1	700	5.4	725	5.7	750	6.1	770	6.4	790	6.7	845	7.7	895	8.9	940	10.0
12,500	655	5.1	675	5.4	700	5.6	720	5.9	740	6.3	760	6.6	785	7.0	805	7.3	860	8.3	910	9.7	960	10.8
13,000	675	5.7	695	6.0	720	6.2	740	6.5	760	6.9	780	7.2	800	7.6	820	7.9	875	8.8	925	10.5	975	11.6
13,500	695	6.3	720	6.6	740	6.8	760	7.1	780	7.5	800	7.8	820	8.2	840	8.5	890	9.3	940	11.3	995	12.4
14,000	715	6.9	740	7.1	760	7.4	780	7.7	800	8.1	815	8.5	835	8.8	855	9.2	900	10.1	960	12.1	1015	13.4
14,500	740	7.5	760	7.9	780	8.2	800	8.6	815	8.9	835	9.3	850	9.6	870	10.0	915	11.0	975	12.9	1030	14.4
15,000	760	8.3	780	8.7	800	9.1	820	9.5	835	9.8	855	10.2	870	10.5	890	10.9	930	12.0	990	13.7	1050	15.5
16,000	800	10.1	820	10.4	840	10.8	860	11.2	875	11.6	890	12.0	905	12.3	920	12.6	980	14.3	1040	16.0	----	
17,000	840	11.9	860	12.2	880	12.6	895	13.0	910	13.4	925	13.8	940	14.1	955	14.4	1015	16.5	----		----	
18,000	880	13.7	900	14.1	915	14.5	930	14.9	945	15.3	960	15.6	975	15.9	990	16.2	----		----		----	

NOTE – The above chart is based on the maximum hp condition of zone dampers in the intermediate position, standard frame filters and 20% outside air. Return air blower is not included. For full cooling or full heating, cfm will be reduced approximately 10% with 1 heat exchanger, electric heat or 4 row coil or 20% with 2 heat exchangers, or 6 row coil.

DMS4-415 RETURN AIR BLOWER PERFORMANCE (3 And 5 hp Motor)

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
9000	----		----		----		----		----		----		----		----		450	1.9	465	2.1	480	2.3
10,000	----		----		----		----		----		----		----		455	1.9	475	2.1	490	2.3	505	2.5
11,000	----		----		----		----		----		455	1.8	470	2.0	485	2.2	495	2.4	510	2.6	525	2.8
12,000	----		----		----		----		465	1.9	480	2.1	495	2.3	510	2.5	520	2.6	535	2.8	550	3.0
13,000	----		----		460	1.7	475	1.9	490	2.2	505	2.4	520	2.6	535	2.8	545	3.1	560	3.3	575	3.5
14,000	460	1.7	475	1.9	490	2.1	505	2.3	520	2.5	535	2.7	550	2.9	560	3.2	575	3.4	585	3.7	600	3.9
15,000	495	1.9	510	2.1	520	2.3	535	2.6	545	2.8	560	3.0	575	3.3	590	3.6	600	3.8	615	4.1	630	4.4
16,000	530	2.3	540	2.5	555	2.8	565	3.0	580	3.3	590	3.5	605	3.8	615	4.1	630	4.3	640	4.6	655	4.9
17,000	565	2.8	575	3.1	585	3.3	600	3.6	610	3.8	620	4.1	635	4.4	650	4.7	----		----		----	
18,000	600	3.2	610	3.5	620	3.8	630	4.0	640	4.3	650	4.6	----		----		----		----		----	

DMS4-415 RETURN AIR BLOWER PERFORMANCE (7-1/2 hp Motor)

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT (Inches Water Gauge)																			
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
15,000	----		----		----		----		----		----		----		----		----		660	5.4	690	6.6
15,500	----		----		----		----		----		----		----		----		660	5.4	675	5.8	700	6.9
16,000	----		----		----		----		----		----		----		660	5.4	680	5.8	685	6.2	715	7.5
16,500	----		----		----		----		----		----		660	5.4	675	5.8	685	6.2	700	6.6	725	7.5
17,000	----		----		----		----		----		----	665	5.4	675	5.7	690	6.1	700	6.6	715	7.0	735	7.8
17,500	----		----		----		----		----	670	5.4	680	5.7	690	6.1	700	6.5	715	7.0	725	7.4	750	8.1
18,000	----		----		----		----	670	5.4	680	5.7	695	6.1	705	6.4	715	6.9	730	7.3	740	7.8	765	8.4

NET WEIGHTS, CENTER OF GRAVITY AND CORNER WEIGHTS

DMS4-185-205 & 275

Components		Total Net Weight (lbs.)	Moment in "X" Direction	Moment in "Y" Direction
Basic unit		2,525	331,000	+7,500
*11 zone mounting frame		370	49,000	0
*AF7-275 combustible adapter frame		30	----	----
Blower Motor & Drives	5 hp	75	8,000	+1,500
	7-1/2 hp	90	10,000	+1,800
	10 hp	130	14,000	+2,600
Heating Options	1 gas heat exchanger	295	19,000	+5,800
	2 gas heat exchangers	495	28,000	+8,200
	Electric Section	255	14,000	-2,200
Cooling	Evaporator only	270	18,000	-1,100
	Complete system (DMS4-185)	1,530	304,000	-3,400
	Complete system (DMS4-205)	1,530	304,000	-3,400
	Complete system (DMS4-275)	1,725	339,000	-3,800
	Complete system with condenser heat (DMS4-185)	1,655	313,000	-4,000
	Complete system with condenser heat (DMS4-205)	1,755	330,000	-4,200
	Complete system with condenser heat (DMS4-275)	1,850	348,000	-4,400
POWER SAVER System		40	6,000	+1,000
Filters		75	10,000	----
Return air blower		275	56,000	+4,600
Distribution Head	11 zone (E.P.)	375	5,000	0
	11 zone (MOD.)	425	6,000	0
	15 zone (E.P.)	475	6,000	0
	15 zone (MOD.)	525	7,000	0
	Double Duct	180	2,000	0

*Do not include in hoisting weight.
NOTE — Moment is in inch lbs.
Legend — MOD. — Modulating damper motor (Each motor weighs 9 lbs.)
E.P. — Electrical proportioning damper motor.

EXAMPLES:

How to calculate center of gravity:

1 — Add up **System Component** wts. to arrive at **Total Net Wt.**

2 — Add up **Moment in "X" Direction** figures to arrive at a total.

3 — Add up **Moment in "Y" Direction** figures to arrive at a total.

4 — Divide total **Moment in "X" Direction by Total Wt.** to obtain "X".

5 — **Divide total Moment in "Y" Direction by Total Wt.** to obtain "Y" Dimension.

How to calculate corner weights:

$$A = (\text{Wt. of unit}) \frac{(265 - X)(43 + Y)}{23{,}000}$$

$$B = (\text{Wt. of unit}) \frac{(265 - X)(43 - Y)}{23{,}000}$$

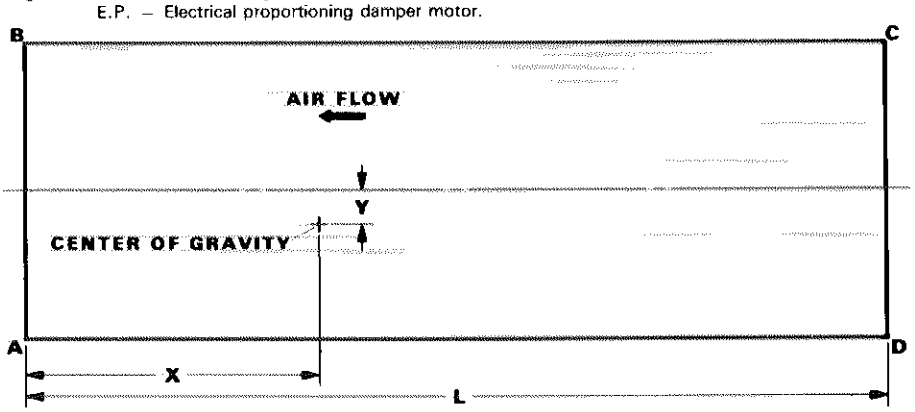
$$C = (\text{Wt. of unit}) \frac{(X)(43 - Y)}{23{,}000}$$

$$D = (\text{Wt. of unit}) \frac{(X)(43 + Y)}{23{,}000}$$

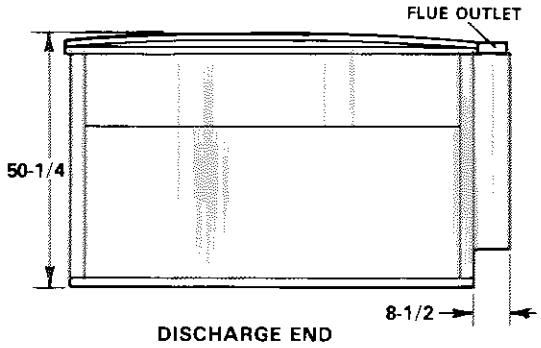
DMS4-415

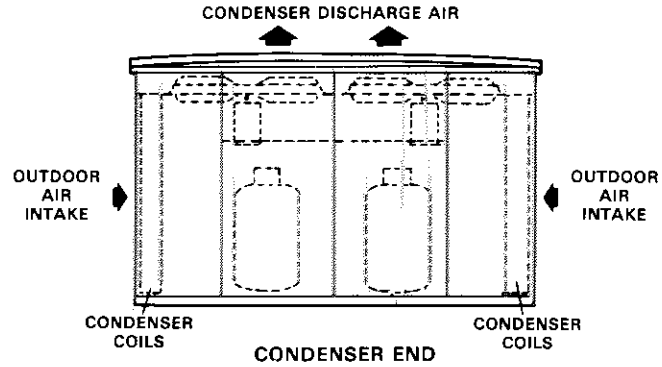
Components		Total Net Weight (lbs.)	Moment In "X" Direction	Moment In "Y" Direction
Basic unit		2940	592,000	+7000
*11 or 17 zone mounting frame		475	65,100	0
*AF6-415 combustible adapter frame		45	----	----
Blower Motor & Drives	7-1/2 hp	90	12,000	+3000
	10 hp & 15 hp	130	18,000	+4000
Heating Options	1 gas heat exchanger	415	23,000	+8000
	2 gas heat exchanger	660	45,000	+10,000
	Electric section	460	30,000	+9000
DX Cooling	Evaporator only	375	35,000	-2000
	Complete system	2240	515,000	-3000
	Complete system w/cond. heat	2425	532,000	-4000
POWER SAVER System		55	11,000	+1000
Filters		125	22,000	0
Return air blower		270	66,000	+8000
Distribution Head	11 Zone (E.P.)	675	9,000	0
	11 Zone (MOD.)	760	10,000	0
	17 Zone (E.P.)	820	11,000	0
	17 Zone (MOD.)	915	12,000	0
	Double Duct	300	5,000	0

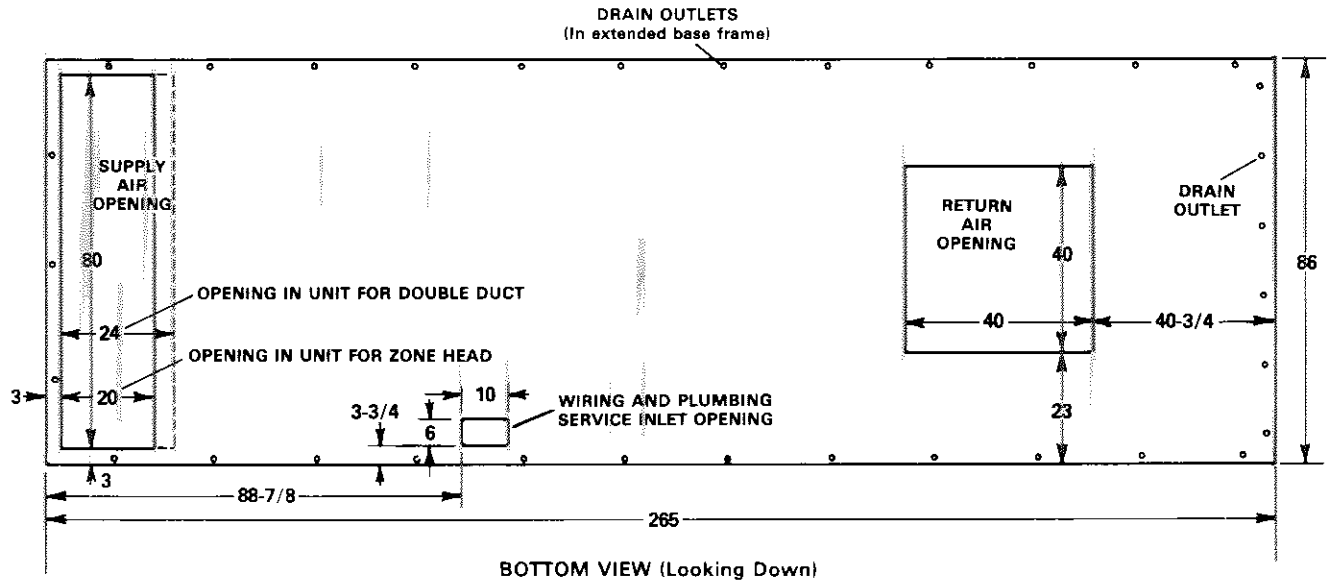
*Do not include in hoisting weight.
NOTE — Moment is in inch lbs.
Legend MOD. = Modulating damper motor (Each motor weighs 9 lbs.)
E.P. — Electrical proportioning damper motor.

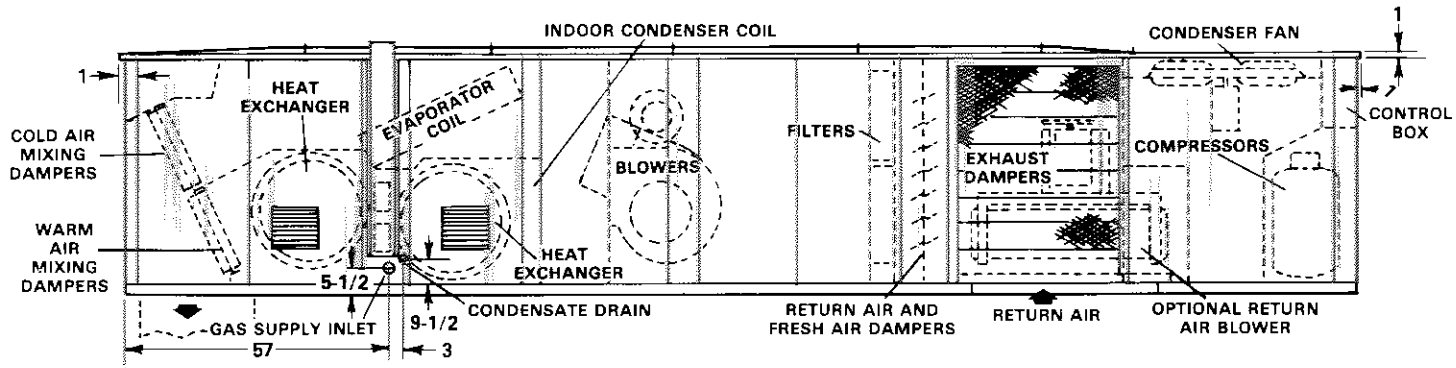


DIMENSIONS (inches)
DMS4-185-205-275

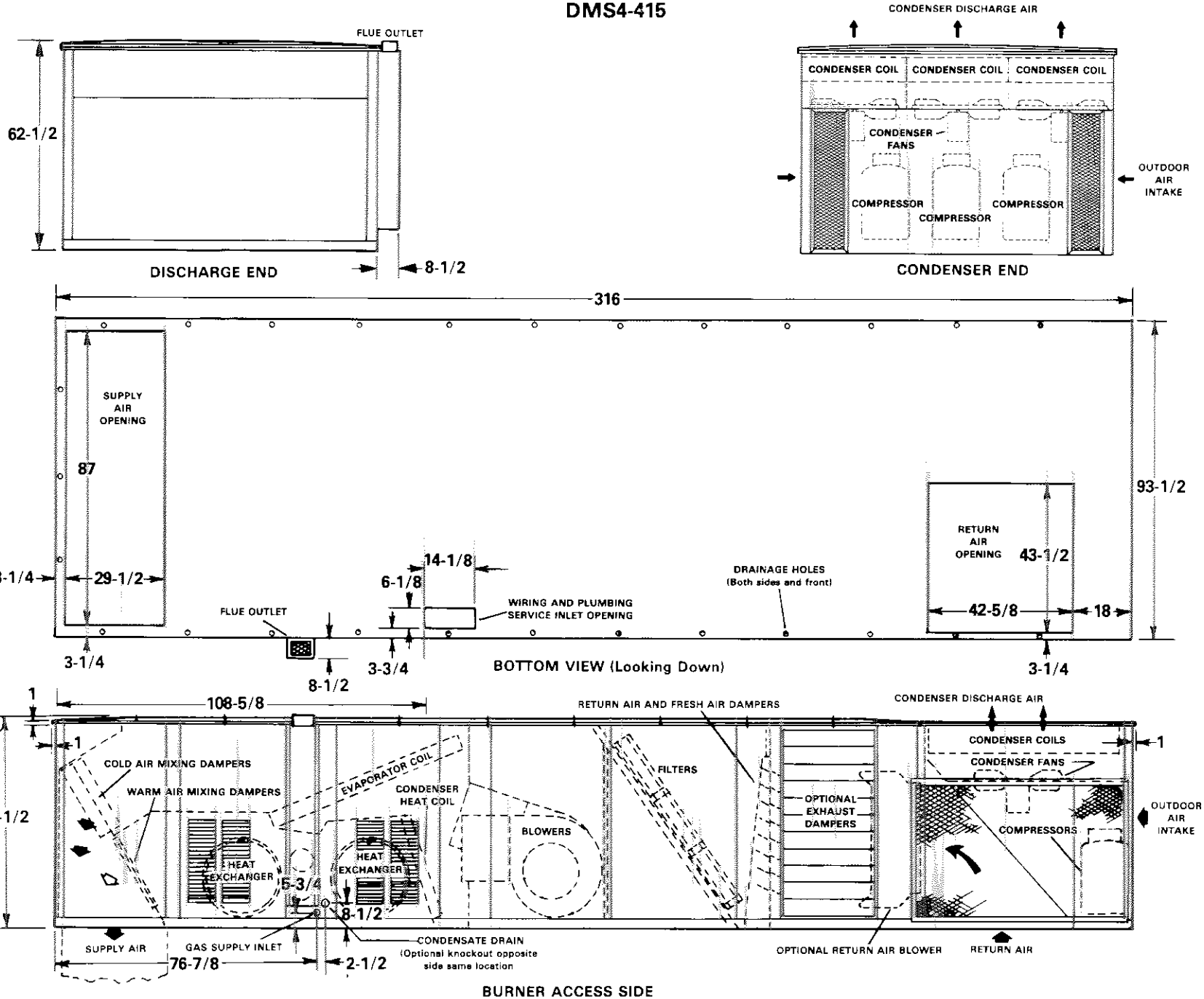




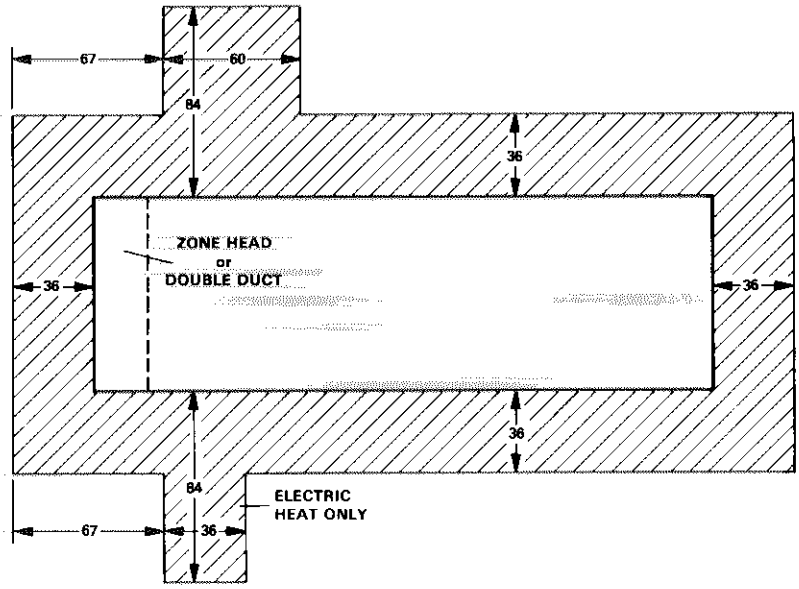




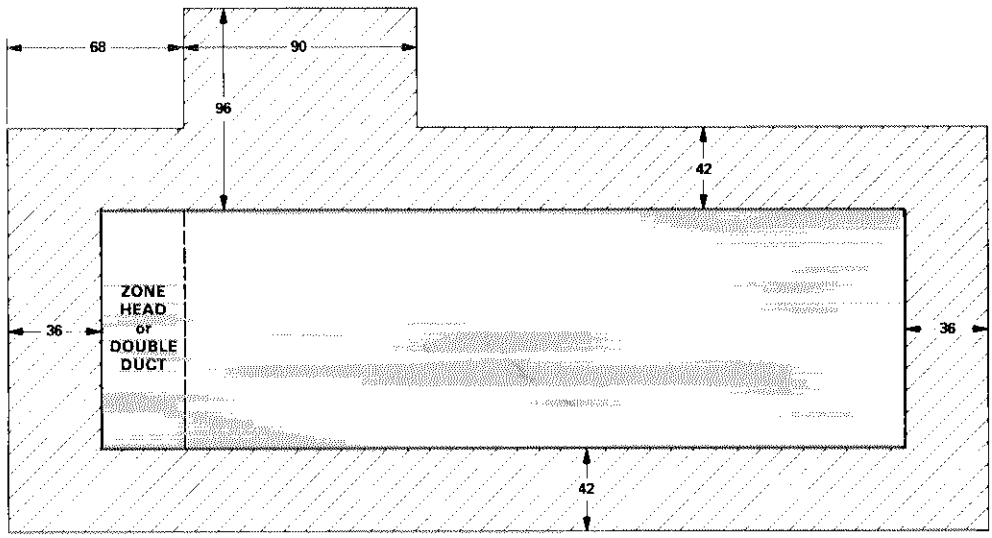
DIMENSIONS (inches)
DMS4-415



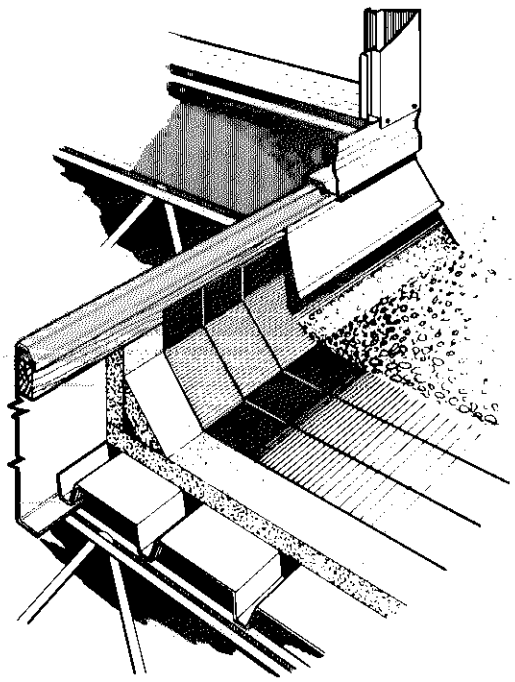
DMS4-185-205-275 SERVICE CLEARANCES

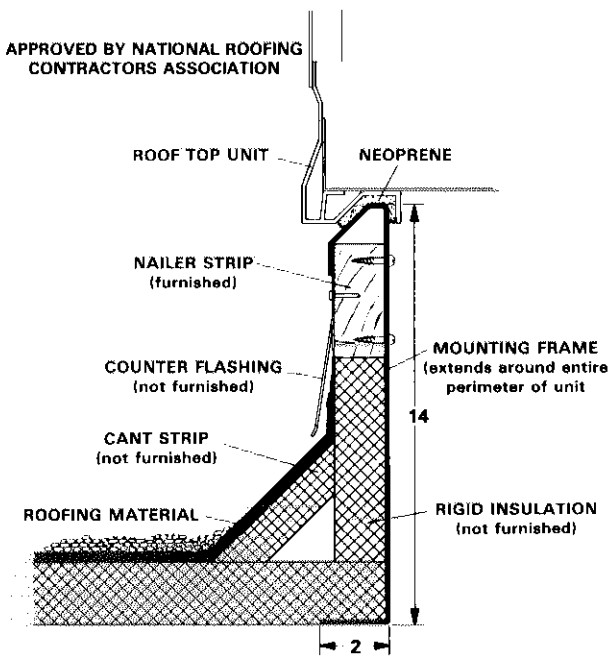


DMS4-415 SERVICE CLEARANCES



TYPICAL MOUNTING AND FLASHING DETAIL FOR MF3 ROOF MOUNTING FRAME





MF3 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 section and joining plates. The entire weight of the unit is transferred uniformly to the mounting plates.

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 joint plates bolted the maximum frame span between supports is 5 feet.

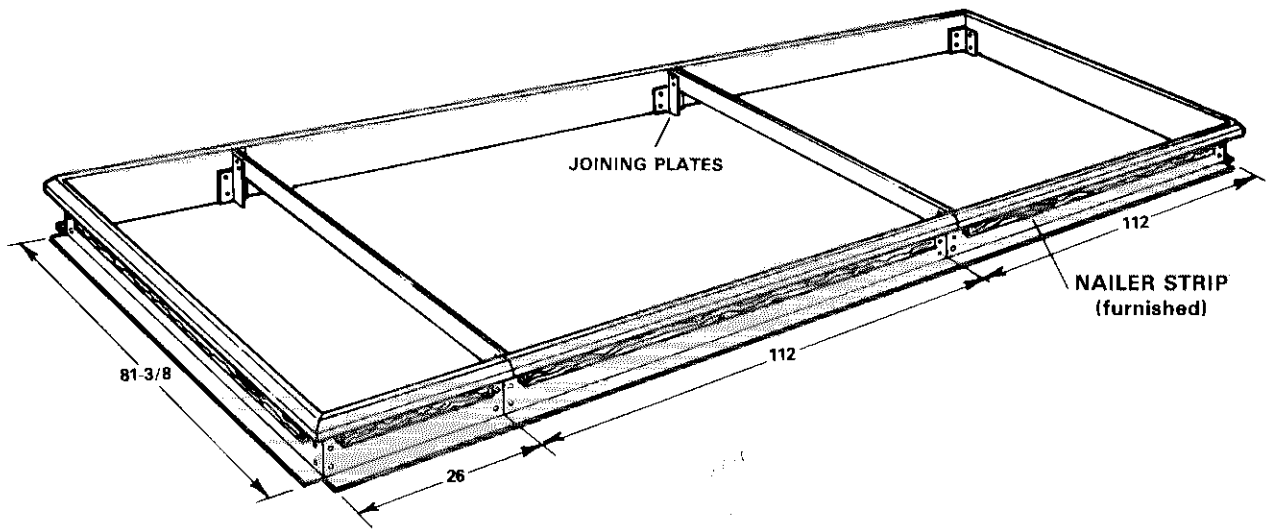
2 — With joint plates welded to frame the maximum frame span or cantilever is:

	Span	Cantilever
MF3 Frame	16 feet	9 feet

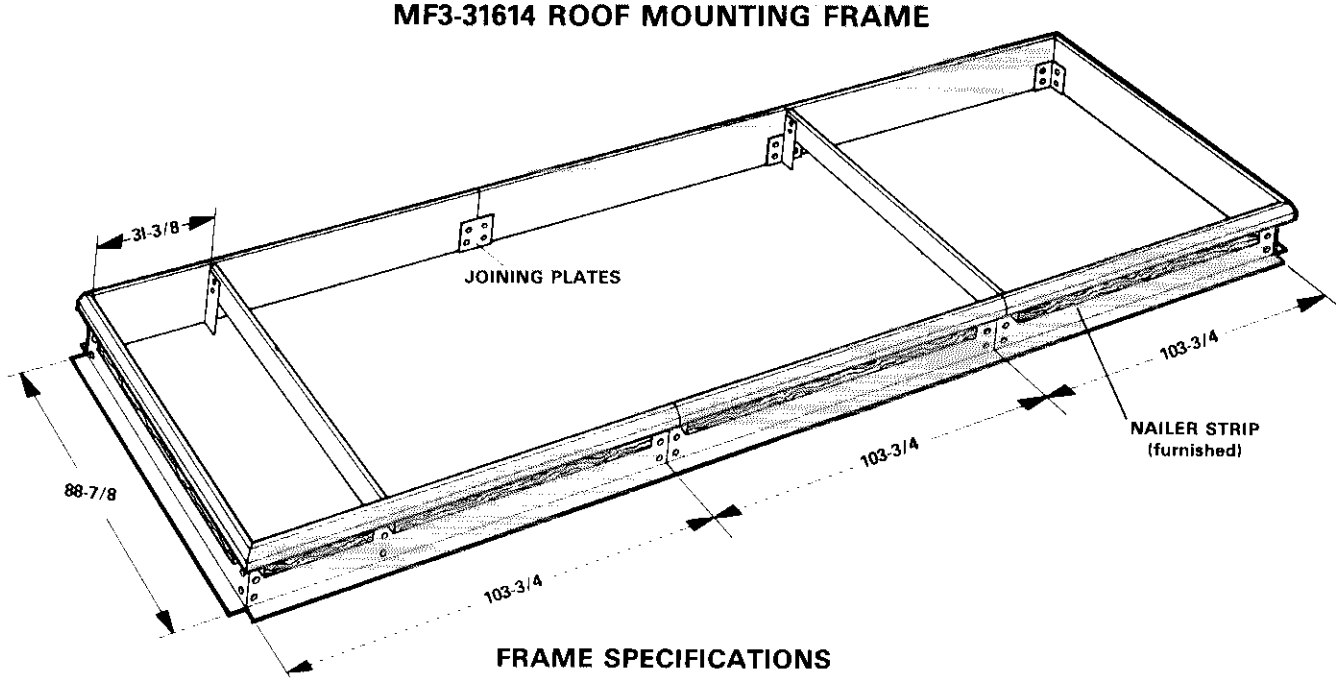
3 — A bolted joint cannot be included in a cantilever. If the roof mounting frame is cantilevered more than 6 feet the joint plate and frame (closest to the overhang) must be welded.

4 — There must be at least 32 inches of frame in contact with the roof supports.

DMS4-185-205-275
MF3-26514 ROOF MOUNTING FRAME



DMS4-415
MF3-31614 ROOF MOUNTING FRAME



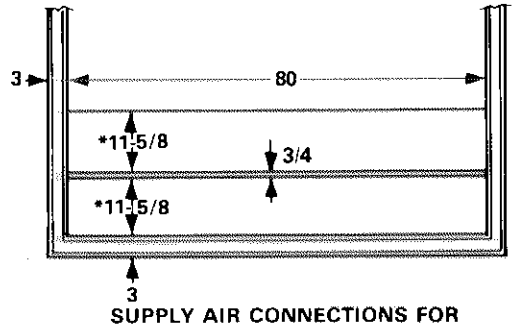
FRAME SPECIFICATIONS

Model Number	MF3-26514 MF3-31614
*Frame moment of inertia (I)	77 in.^{4}
*Frame section modulus $\frac{I}{C}$	10.7 in.^{3}
Mounting frame weight (lb./ft. of length)	6.1
Mounting frame design strength (psi)	20,000

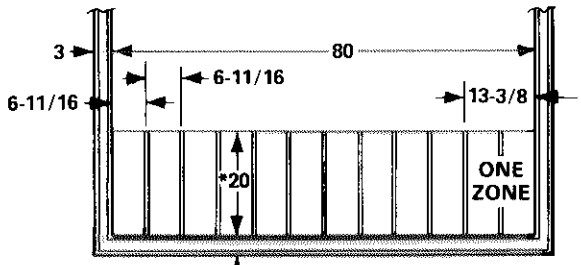
*Includes both sides of roof mounting frame.

DIMENSIONS (inches)

DMS4-185-205-275 SUPPLY AIR CONNECTIONS

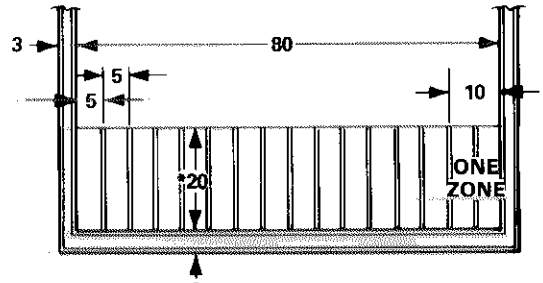


SUPPLY AIR CONNECTIONS FOR DOUBLE DUCT APPLICATIONS



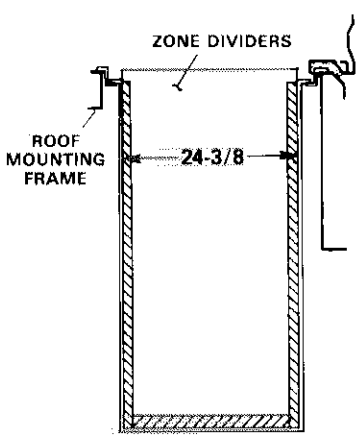
SUPPLY AIR CONNECTIONS FOR 11 OR LESS ZONES

*Opening in bottom of unit.

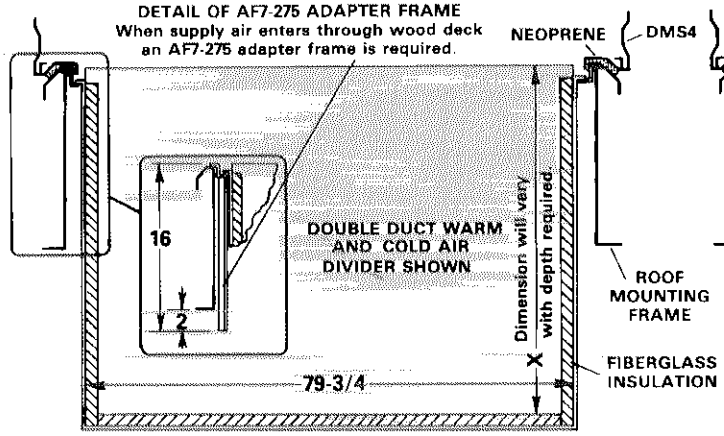


SUPPLY AIR CONNECTIONS FOR 15 OR LESS ZONES

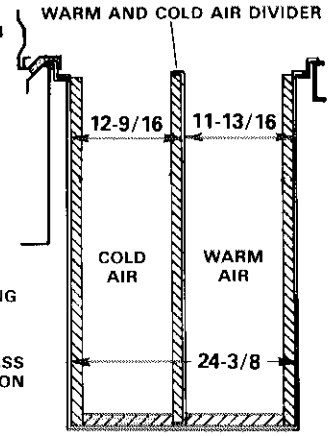
DMS4-185-205-275 SUPPLY AIR PLENUMS



SIDE VIEW OF ZONE HEAD PLENUM CONSTRUCTION

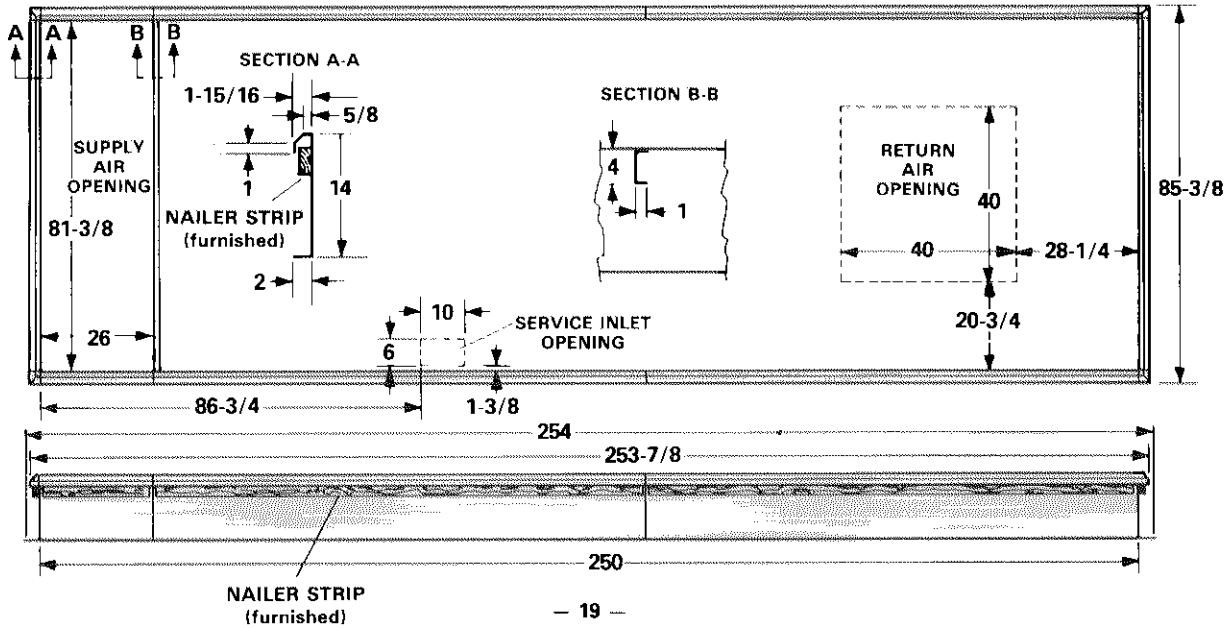


END VIEW



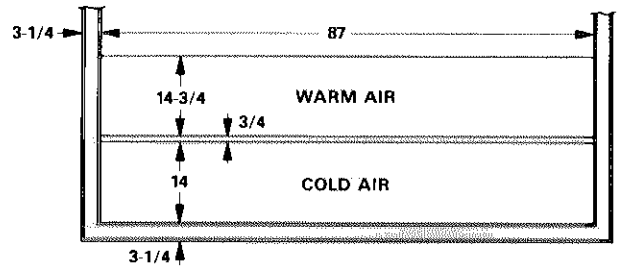
SIDE VIEW OF DOUBLE DUCT PLENUM CONSTRUCTION

DMS4-185-205-275
MF3-26514 ROOF MOUNTING FRAME (11 or 15 Zone Head and Double Duct)

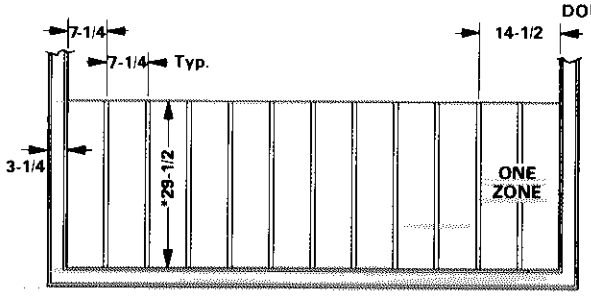


DIMENSIONS (inches)

DMS4-415 SUPPLY AIR CONNECTIONS

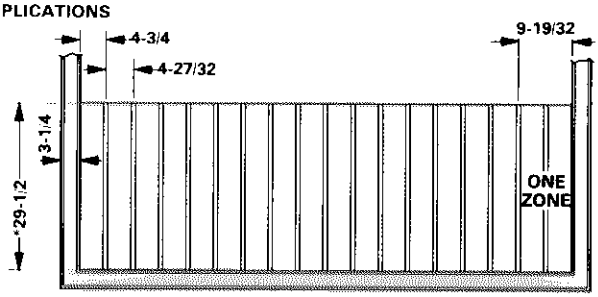


SUPPLY AIR CONNECTIONS FOR DOUBLE DUCT APPLICATIONS



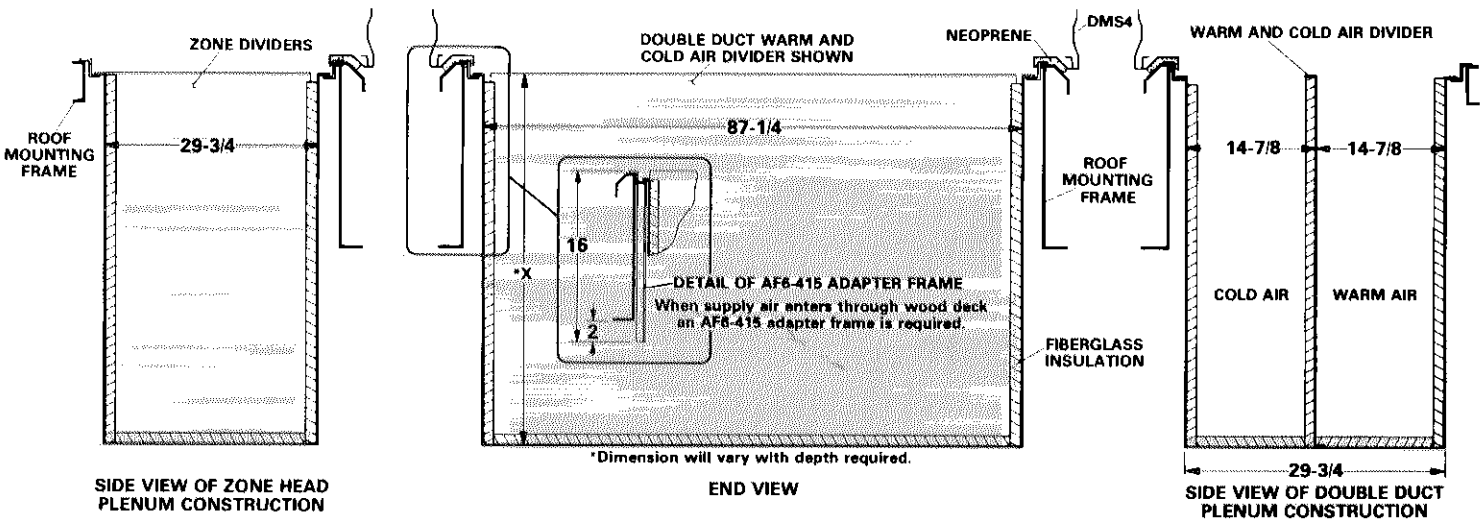
SUPPLY AIR CONNECTIONS FOR 11 OR LESS ZONES

*Opening in bottom of unit.



SUPPLY AIR CONNECTIONS FOR 17 OR LESS ZONES

DMS4-415 SUPPLY AIR PLENUMS



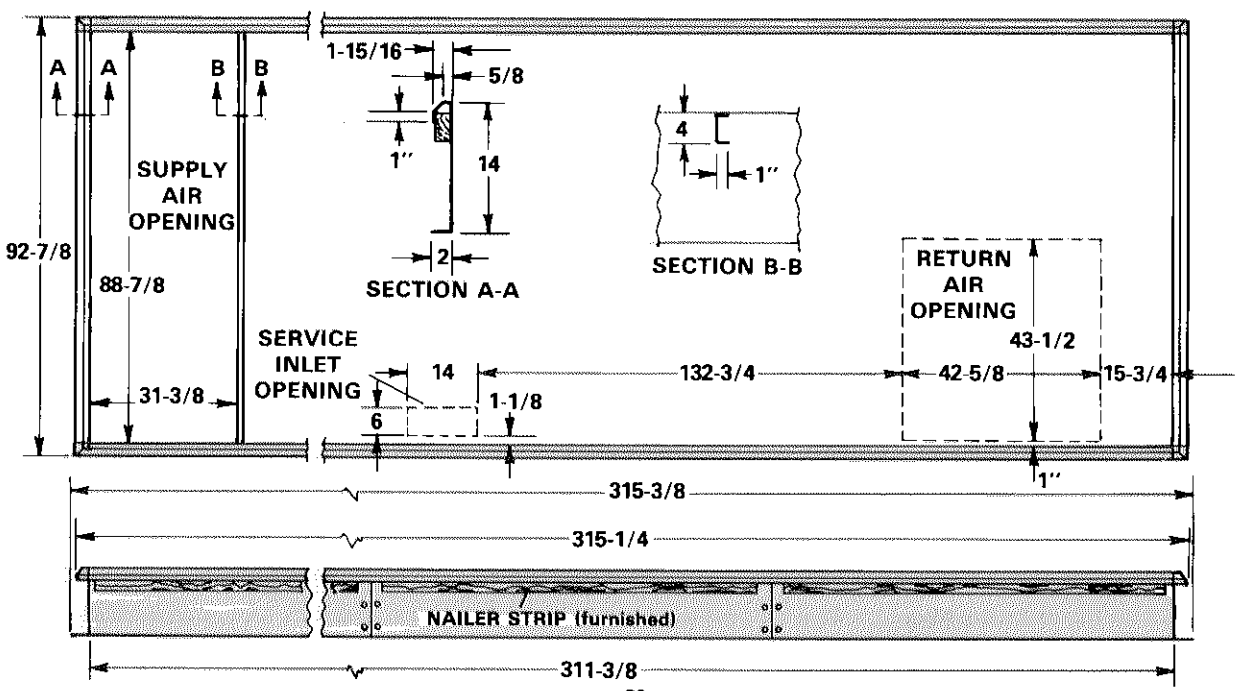
SIDE VIEW OF ZONE HEAD PLENUM CONSTRUCTION

*Dimension will vary with depth required.

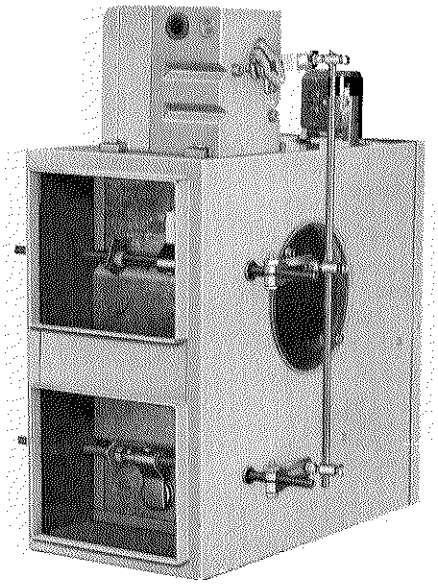
END VIEW

SIDE VIEW OF DOUBLE DUCT PLENUM CONSTRUCTION

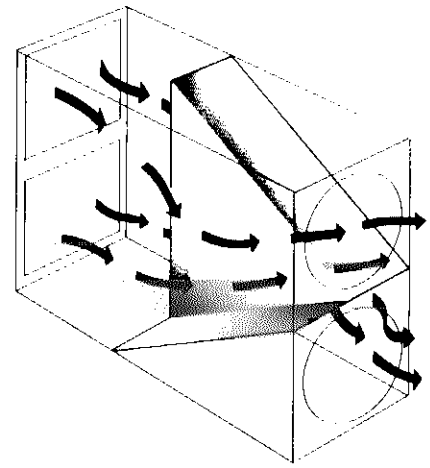
DMS4-415
MF3-31614 ROOF MOUNTING FRAME (11 or 17 Zone Head and Double Duct)



ZD8 SERIES MIXING DAMPER BOXES



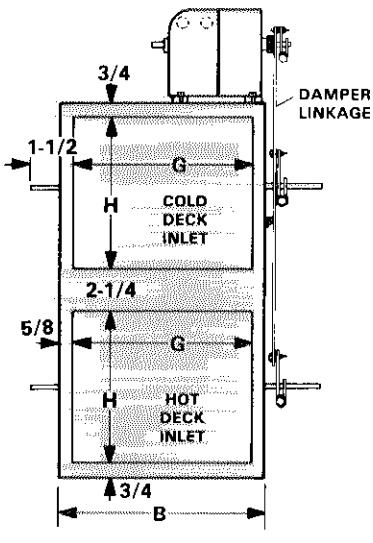
AIR PATTERN

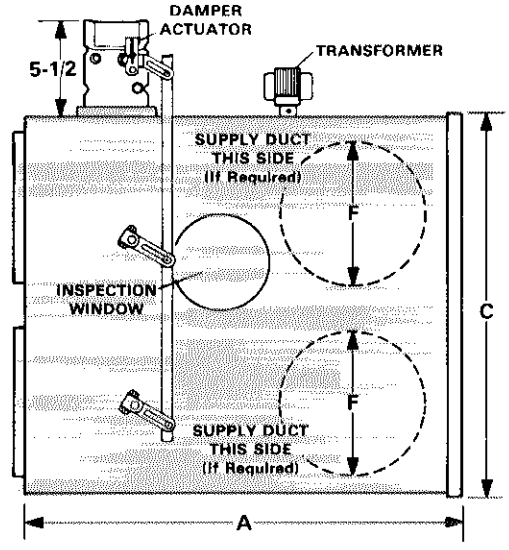


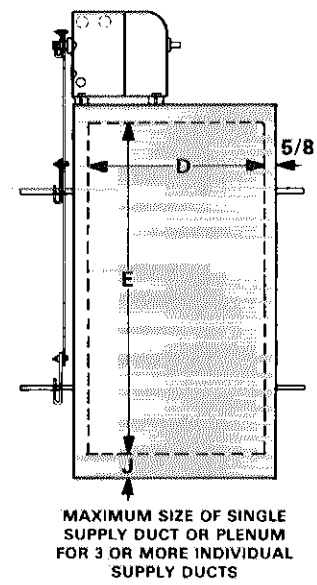
SPECIFICATIONS

Model No.	Shipping Weight (lbs.) (1 Package)	Air Volume Range (cfm)	Resistance (in. wg)	
			Minimum (cfm)	Maximum (cfm)
ZD8-250	35	150-250	.10	.22
ZD8-400	38	250-400	.10	.22
ZD8-700	50	400-700	.07	.21
ZD8-1000	60	700-1000	.11	.22
ZD8-1500	75	1000-1500	.09	.21
ZD8-2200	90	1500-2200	.11	.24

DIMENSIONS (inches)

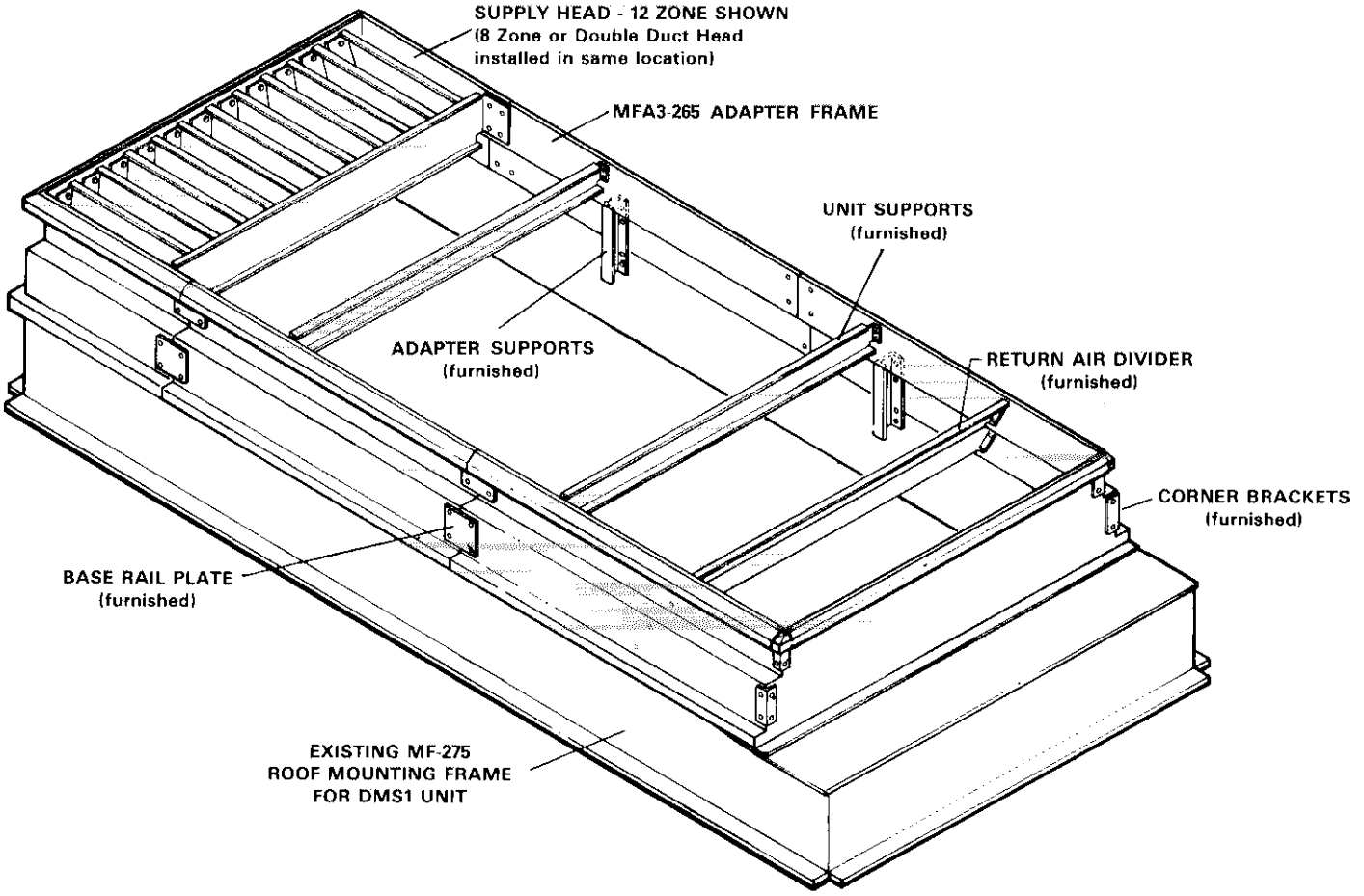




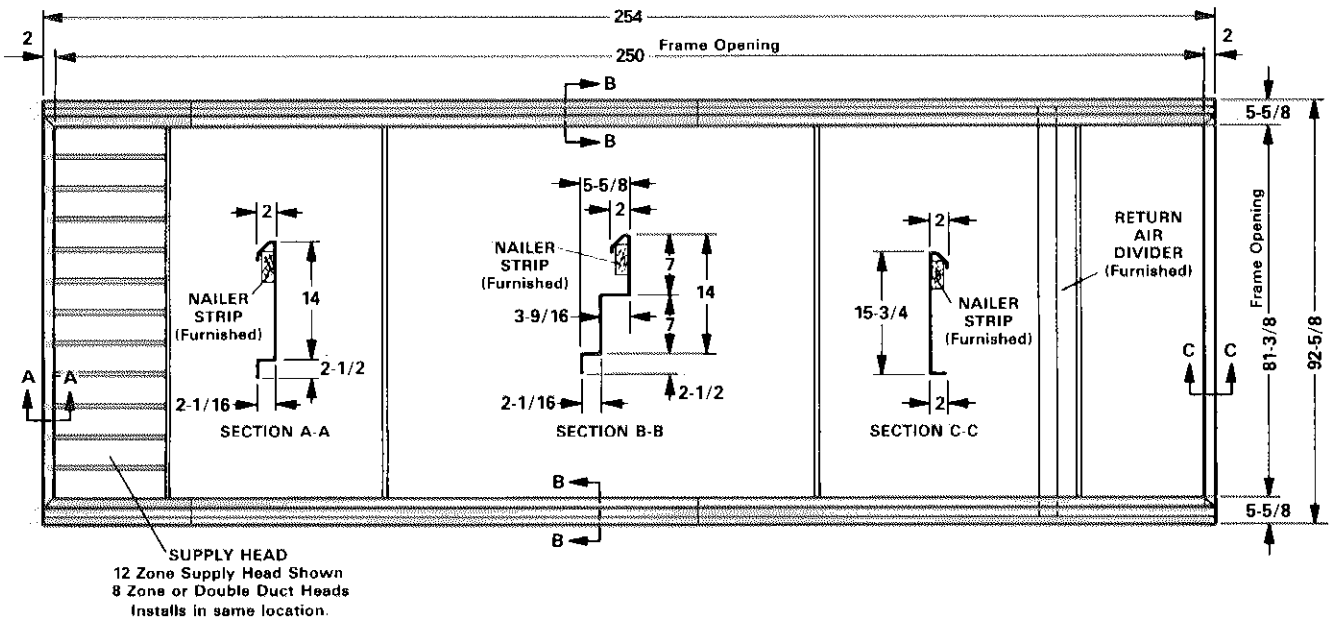


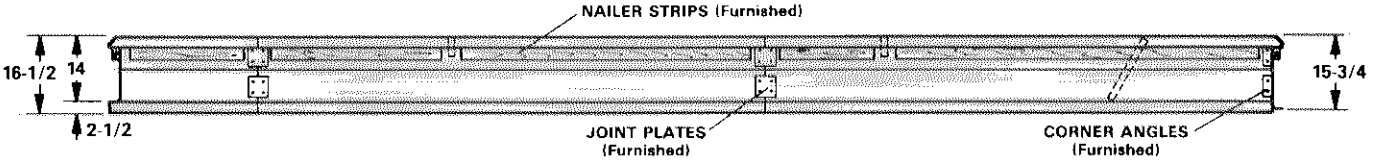
Model No.	A	B	C	D	E	F	G	H	J
ZD8-250	16	8-1/4	15-3/4	7	14-1/2	6	7	6	5/8
ZD8-400	20	9-1/4	17-1/4	8	16	7	8	6-3/4	5/8
ZD8-700	24	11-1/4	20-3/4	10	18	9	10	8-1/2	1-3/8
ZD8-1000	27-1/2	13-1/4	23-3/4	12	22	10	12	10	7/8
ZD8-1500	31-1/2	15-1/4	27-1/4	14	26	12	14	11-3/4	5/8
ZD8-2200	36	17-1/4	31-1/4	16	30	14	16	13-3/4	5/8

MFA3-265 ADAPTER MOUNTING FRAME
(Adapts DMS4-185-205-275 to DMS1 Roof Mounting Frame)



DIMENSIONS (inches)





GUIDE SPECIFICATIONS

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

General — *Furnish and install a roof mounted multizone (heating-cooling unit) with all controls, ducts and zone dampers. The Multizone system shall be a standard product of a firm regularly engaged in manufacture of heating-cooling equipment. The manufacturer shall have parts and service available throughout the United States and Canada.*

The installed weight shall not be more than . . . . . lbs. Entire unit shall have a width of not more than . . . . . inches, a depth of not more than . . . . . inches and an overall height of not more than . . . . . inches.

The equipment shall be shipped completely factory assembled, pre-charged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

Air Distribution — *Shall be double duct with remote zone dampers or zone dampers located at the unit.*

Balancing dampers shall be located at each zone outlet and be equipped with locking devices.

All air distribution ducts shall be fiberglass or . . . . . ga. galvanized steel insulated with . . . . . inch thick . . . . . lb. density fiberglass or equivalent.

DX Cooling System — *The total certified cooling capacity shall not be less than . . . . . Btuh with an evaporator air volume of . . . . . cfm, an entering wet bulb air temperature of . . . . . °F and outdoor air db temperature of . . . . . °F. The compressor power input shall not exceed . . . . . watts 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. (evaporator) and . . . . . sq. ft. (condenser).

The system shall consist of two (three 415 model) independent refrigeration systems including compressor, condenser coil, condenser fan and evaporator coil with expansion valve. The condenser coils shall have sub-cooling rows. The compressors shall be internally spring mounted and have positive crankshaft lubrication, crankcase heater, discharge temperature limiter, high and low pressure switches, compressor monitor, current and temperature sensing motor overloads.

Condenser Indoor Heat — *The refrigeration system shall have an indoor condenser coil which delivers . . . . . Btuh of heat to the conditioned area whenever the system requires simultaneous heating and cooling. It shall be located in the hot deck.*

Heating System — *The heating capacity output shall be . . . . . Btuh with a gas input of . . . . . Btuh.*

Automatic controls furnished as standard equipment shall give single stage or two stage operation. Cylindrical drum and tube heat exchanger shall be constructed of aluminized steel or glass coated steel. Combination stainless and aluminized steel power burner shall have prepurge, electric spark ignition, 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. Complete service access shall be provided for controls and wiring.

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

Heating elements shall be nichrome bare wire exposed directly to the air stream and be equipped with manual reset backup limits. They shall be controlled by a sequence controller with 1st stage controlling condenser heat.

Approvals — *All gas models shall be AGA certified. Gas and electric models shall be CGA certified. All wiring shall be in compliance with NEC or CEC.*

Electronic Control System — *Shall consist of a room temperature sensing transmitter (set point adjustable 55°F to 85°F) for each zone, a supply air sensor for each zone, zone damper actuators for each zone and a load analyzer control module with circuit board and heat-cool logic relays to operate the mechanical equipment. Modulating limit control, morning warm-up control and enthalpy control shall regulate a modulating damper actuator to provide outdoor air, return air and mixed air volume requirements. Shall be equipped with Outside-Air-Discriminator which will automatically drive the POWER SAVER dampers to the minimum position when the energy required to maintain the hot deck is greater than the energy input to operate the first stage of mechanical cooling. 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 DC 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 DC voltage. The supply air sensor, located in the supply air duct, shall sense the supplied 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 1 degree change at the room transmitter shall equal the signal produced by a 20 degree 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 zone damper actuators and mixed air/ventilation damper actuator shall be programmed to operate the mechanical equipment automatically in sequence, as required, through the cooling, ventilating and heating cycles. The load analyzer control module shall also provide a central location for troubleshooting and identification of improper wiring.*

Roof Mounting Frame — *A hot dipped galvanized steel mounting frame shall be furnished. It shall conform to the shape of the unit and contoured to accept the base of the equipment. Flashing shall be the responsibility of a roofing contractor. The 14" high frame shall be approved by National Roofing Contractors Assocation.*

Frame and Casing — *All external surfaces shall be of painted (outdoor enamel) heavy gauge galvanized steel or (base frame) extruded aluminum. All galvanized side and top panels shall be insulated with 1-1/2" thick fiberglass insulation. The extruded aluminum base shall be lined with 1" thick fiberglass insulaton. The top panels shall be joined with a 3/16" diameter rubber tubing in the bottom of each standing seam. Side panel seams shall be sealed with polyurethane foam. All interior support members shall be heavy gauge steel. All access panels shall have locking door handles. Shall have heavy gauge steel hoisting lugs.*

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

(Continued on next page)

GUIDE SPECIFICATIONS (Continued)

Air Filters — *One inch thick cleanable polyurethane media frame type filters shall have not less than . . . . . sq. ft. of free area. Filter rack shall be capable of accepting two inch thick alternate filters.*

Supply Air Blowers — *Twin supply air blowers shall have permanently lubricated ball bearings, velocity pressure converters, adjustable belt drives and a cradle motor mount where belt tension can be easily adjusted. Blower wheels shall be statically and dynamically balanced. The entire assembly shall be floated on rubber mounts. They shall be capable of delivering . . . . . cfm at external static pressure of . . . . . inches water gauge requiring . . . . . bhp and . . . . . rpm.*

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

Return Air Blower — *Shall have permanently lubricated ball bearings, adjustable belt drives and be capable of exhausting . . . . . cfm at an external static pressure of . . . . . inches water gauge requiring . . . . . bhp and . . . . . rpm.*

Exhaust Air 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.*

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. 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.*

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

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

Night Setback Controls — *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, factory installed in the unit, shall provide night setback operation.*

Mixing Damper Boxes — *Shall be available for double duct applications. Mechanically linked dampers shall coordinate hot and cold supply air at each zone. Capable of handling . . . . . cfm at an external static pressure of . . . . . inches water gauge. Shall install in the duct system within the structure.*