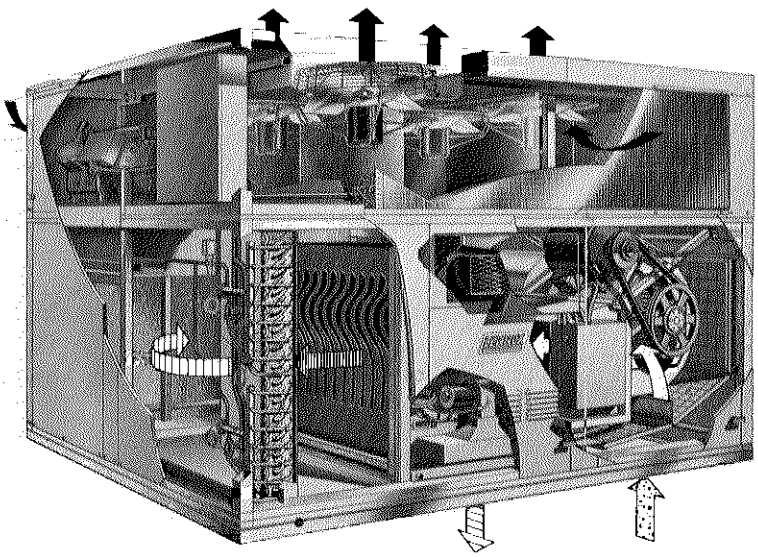
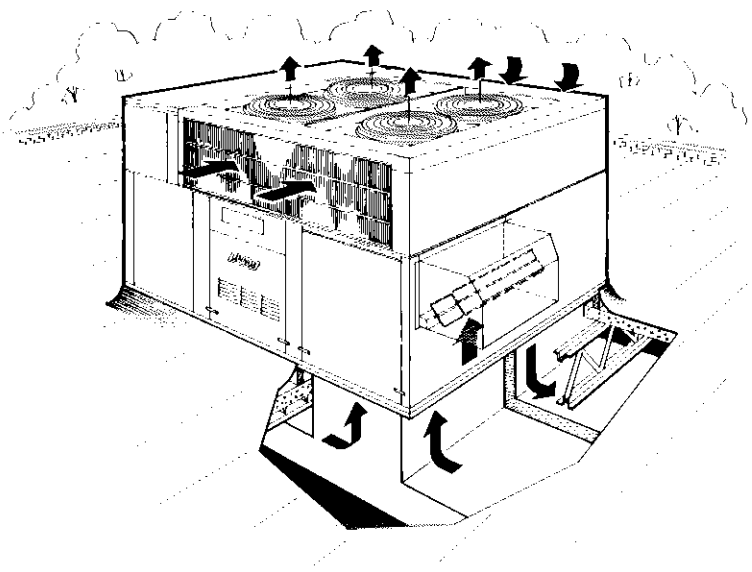
LENNOX®

ALL - SEASON—COOLING & GAS HEATING
GCS2-1853-490—HORIZONTAL
15 Tons of Cooling with 490,000 Btuh Max. Heating

- Precharged Refrigeration System
- Lennox DURACURVE® Heat exchanger
- DURAGLASS[T.M.] Coated Heat Exchanger
- Two Stage Heating & Cooling
- Large Service Access Panels
- Cleanable Air Filter Furnished
- Split Evaporator Coil
- Resiliently Mounted Blowers
- Power Supply Choice



Roof Mounted Heating—Cooling Unit Saves Valuable Floor Space



Typical Rooftop Installation Showing Fresh Air Connection.
Manual Damper Box Optional and must be ordered extra.

Versatile Unit Has Air Pattern Choice

Highly efficient air cooled DX cooling and gas fired heating all in one compact package shipped completely assembled and precharged ready to operate. Equipment is designed for rooftop installation and shipped as standard for bottom handling of conditioned air. However, this versatile unit can handle conditioned air through the end. End air handling works very nicely with the unit mounted on a slab at grade level with air distribution accomplished through the side of the building. DURAGLASS heat section and burners allow 100% outdoor air usage regardless of temperature. Non-coated heat exchangers oftentimes rust out when operated with 100% outdoor air at cold ambients due to condensation. Two stage heating and two stage cooling thermostat is furnished as standard equipment. Unit is completely weather-proof for outdoor installation.

Installation Clearances

Approved only for outdoor installation with the following minimum installation clearances:

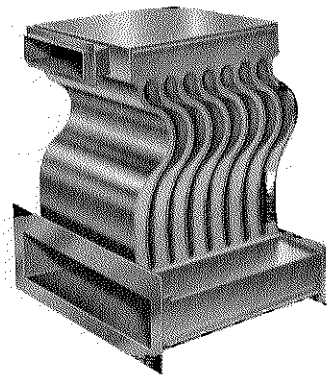
Condenser Side — 30 inches Top — 36 inches
Duct Side — 6 inches Control Side — 66 inches
Opposite Control Side — 24 inches
Approved for installation on combustible floors.

NOTE: Specifications, ratings and dimensions subject to change without notice.

NO REFRIGERANT CHARGING ON THE JOB—Refrigeration system is completely charged. No expensive and time consuming charging procedures are necessary.

A major engineering breakthrough—Lennox engineering and experience brings to the heating industry the first direct-fired heat exchanger which eliminates all the historic fatigue failure, ticking, resonance and cleanability problems inherent in clam type furnaces. Its name is LENNOX DURACURVE. Its secret—freedom.

Old style clam type heat exchangers were rigidly constrained, dimpled, ribbed and internally baffled to maintain proper and constant flue restriction required for complete combustion and maximum efficiency while maintaining proper venting. Metal so constrained and held—ticked, groaned and sometimes cracked as its desire to expand during heating was restricted. **Not so with LENNOX DURACURVE ! ! !** In this unique design the sides of the clam-section form a flue restriction zone comprised of sections of two concentric cylinders. As the sides grow they expand and move—but in the same direction and at the same rate.



LENNOX DURAGLASS—The industry's first heat exchanger coating designed specifically for direct-fired furnaces. Unlike common types of thin, porous combination vitreous metallic finishes which are classified under Bureau of Standard No. A-19, LENNOX DURAGLASS is a relatively thick (.0045"), highly flexible, non-porous glass coating fused to the entire heat exchanger—inside and out—at 1600F. LENNOX DURAGLASS—product of seven years of research and development—has exactly the same coefficient of expansion as the steel it protects—will never chip, crumble or crack. Gives lifetime protection against the wet acids formed by gas flames fed combustion air contaminated by small quantities of hydro-or fluorocarbons. Vastly superior to porous A-19 vitreous coatings, aluminized or stainless steel. LENNOX DURAGLASS—Another first from Lennox where good ideas become great products.

Result—Perfect combustion, proper venting and absolute freedom of movement for the metal. No stress or strain—no ticking, groaning or popping noises caused by internal metal expansion forces—and complete elimination of clam-section failure due to fatigue cracking.

Resonance eliminated—The flat drum-like surface of old style heat exchangers could—and did—vibrate in harmony with the pulsations of the combustion process. The result was the irritating, noisy and elusive phenomenon known as resonance. Since all LENNOX DURACURVE surfaces are sections of concentric cylinders there are no drum-like surfaces and, hence no resonance.

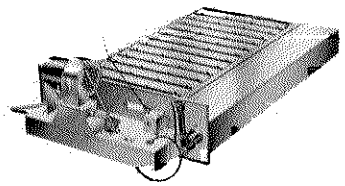
No cleaning problem exists since this type exchanger has no ribs, dimples or internal baffling to interfere with a flexible cleaning tool.

The 16 gauge heat exchanger is the quietest, most durable clam type ever developed—another Lennox Engineering breakthrough ! ! !

THOROUGHLY TESTED AND APPROVED—A.G.A. approved as a forced air furnace with cooling unit. Heating and cooling tested. Complies with ASA Safety Codes. Cooling system has been thoroughly tested and rated in the Lennox calorimeter room according to ARI Standard 210-64. Laboratory life cycle testing of the heat exchanger insures long life of element. In addition each unit is test operated at the factory before shipment.

ASSEMBLED UNIT—Equipment is shipped completely assembled, wired and plumbed ready to install. Installer has only to connect ductwork, gas supply, power supply and thermostat wire to complete the job.

DURAGLASS COATED STEEL BURNERS—Entire power burner assembly slides out of heat section for servicing. Stainless steel ribbon inserts to give a smooth quiet flame. The new Lennox intermittent strip pilot burner is proved by a flame rod before main valve can open. It is spark plug ignited before each heating cycle as dictated by the room thermostat. New air switch positively proves combustion air blower operation before main valve can open. Burner damper linkage arrangement trips a micro switch terminating burner operation in event of linkage failure.



STANDARD CONTROLS—Dual limit controls protect against abnormal operating conditions. Unit is equipped with two stage heating and two stage cooling controls for low load conditions and humidity control applications. A deluxe wall mounted combination two stage heating and two stage cooling thermostat is furnished. Blower operation is continuous when the system is "ON". All controls are factory checked before shipment.

COMPLETE SERVICE ACCESS—Large cabinet access panels give complete service access. Entire burner assembly slides out for complete access to burners, pilot burner and controls. Flue box assembly is easily removed for cleaning. Wiring control panel is completely accessible.

POWERFUL BLOWERS—Ruggedly built blower motor support gives quick and simple belt adjustment and motor changeover. Twin blowers deliver large air volumes with low power consumption. Blower support members are resiliently mounted to cabinet.

DEPENDABLE COMPRESSOR—Resiliently mounted compressor carries a full five year warranty. Suction cooled, accessible gauge ports and overload protected.

LENNOX COILS—Extra large coils (condenser and evaporator) are constructed of ripple-edged aluminum fins flat bonded to seamless copper tubes for maximum strength and heat transfer. Evaporator coil is pressure leak tested at 400 psi, condenser coils are tested at 455 psi.

EFFICIENT CONDENSING SECTION—Located at the top of unit for most efficient air handling. Large axial flow fans circulate large air volumes with low power consumption resulting in high refrigerant cooling capacity giving more Btuh per watt of power input.

THICK INTERIOR INSULATION—All of the interior panels where conditioned air is handled are lined with thick fiberglass insulation. This results in quiet and efficient operation due to the excellent sound deadening and insulating qualities of fiberglass.

REFRIGERATION SYSTEM—Complete factory sealed refrigeration system consists of compressor, condenser coils and fans, split evaporator coil and blowers, refrigerant drier, refrigerant lines connected and a full charge of refrigerant. Controls consist of pressure switches, compressor relay and overload protection.

RUGGED CABINET—Heavy gauge galvanized hot dipped steel cabinet panels with a baked acrylic enamel finish. A five station wash metal preparation assures a perfect bonding surface for the baked acrylic enamel.

CLEANABLE AIR FILTER—Washable, vacuum cleanable polyurethane filter media is furnished as standard. It has a large dust holding capacity and is easily accessible for cleaning.

SPECIFICATIONS

Model Number		GCS2-1853-490
Heating capacity input (Btuh)	Minimum	245,000
	Maximum	490,000
Heating capacity output (Btuh)	Minimum	183,750
	Maximum	367,500
Gas piping size I.P.S. (in.)	Natural	1
	Propane	1
Heat section condensate drain (in.)		¾ IPF
Approx. shipping weight (lbs.) (1 pkg.)		3300
Blower wheel nominal diam. x width (in.)		(2) 15 x 11
Blower motor and drives		See drive table
No. of filters and size (in.)		(2)—16 x 25 x 1 (4)—20 x 25 x 1
*Total cooling capacity (Btuh)		174,000
*Dehumidifying capacity		27
*Compressor watts		17,000
Evaporator condensate drain size I.P.F. (in.)		¾
Refrigerant & charge furnished (lbs)		R-22 — 35 lbs.
Evaporator Coil	Net face area (sq. ft.)	14.70
	Tube diameter (in.)	½
	No. rows of tubes	4
	Fins per inch	10
Condenser Coils (2)	Net face area (sq. ft.)	21.10
	Tube diameter (in.)	½
	No. rows of tubes	4
	Fins per inch	13
Condenser Fans	Diam. (in.) & No. of blades	(4) 22 — 5
	Air volume (cfm factory setting)	11,900 Total
	Rpm (factory setting)	1042
	Motor horsepower	(4) ½
	Motor watts (factory setting)	535 (x4)

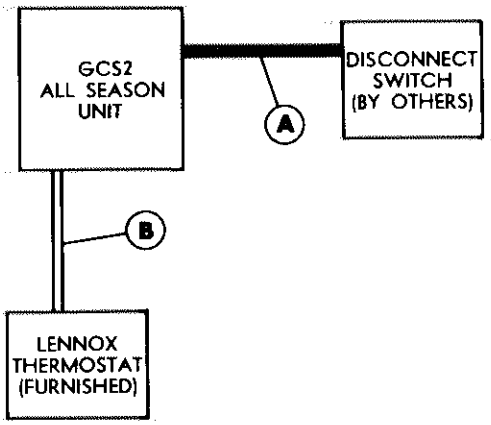
*At ARI Standard 210-64 conditions.

ELECTRICAL DATA

Model No.			GCS2-1853-490			
Line voltage data			208v 60cy/3ø	220/240v 60cy/3ø	440/480v 60cy/3ø	550/600v 60cy/3ø
Unit operating range (volts)			187-229	198-264	398-528	495-660
Compressor	Full load amps		63.5	57.2	28.6	22.8
	Power factor		.85	.85	.85	.85
	Locked rotor amps		266.0	240.0	120.0	96.0
*Condenser Coil Fan	Full load amps (total)		12.0	12.0	‡12.0	‡12.0
	Locked rotor amps		12.0	12.0	12.0	12.0
Evaporator Coil Blower	2 hp	Full load amps	6.2	6.2	3.1	2.5
		Locked rotor amps	41.0	41.0	20.5	16.4
	3 hp	Full load amps	9.0	9.0	4.5	3.6
		Locked rotor amps	50.0	50.0	25.0	20.0
	5 hp	Full load amps	15.2	15.2	7.6	6.1
		Locked rotor amps	88.0	88.0	44.0	35.2
††Maximum unit amps			90.7	84.4	42.2	33.7
AWG Wire Size For Various Lengths of Run	2 hp	Up to 100'	1	2	6	8
		100' to 200'	0	1	4	6
	3 hp	Up to 100'	1	2	6	8
		100' to 200'	0	1	4	6
	5 hp	Up to 100'	1	1	6	8
		100' to 200'	0	0	4	6
Disconnect Size (amps)	2 hp evap. blower motor		200	100	60	60
	3 hp evap. blower motor		200	100	60	60
	5 hp evap. blower motor		200	200	60	60
Fusetron Size (amps)	2 hp evap. blower motor		110	95	55	40
	3 hp evap. blower motor		110	95	55	40
	5 hp evap. blower motor		110	110	55	40

*Four condenser fans. Full load amps are with all four running.
‡Motors are rated at 230v using step down transformer
‡‡With 5 hp evaporator blower motor.

FIELD WIRING



A—Three wire power-see electrical data table

B—Six wire low voltage-18 ga. minimum.

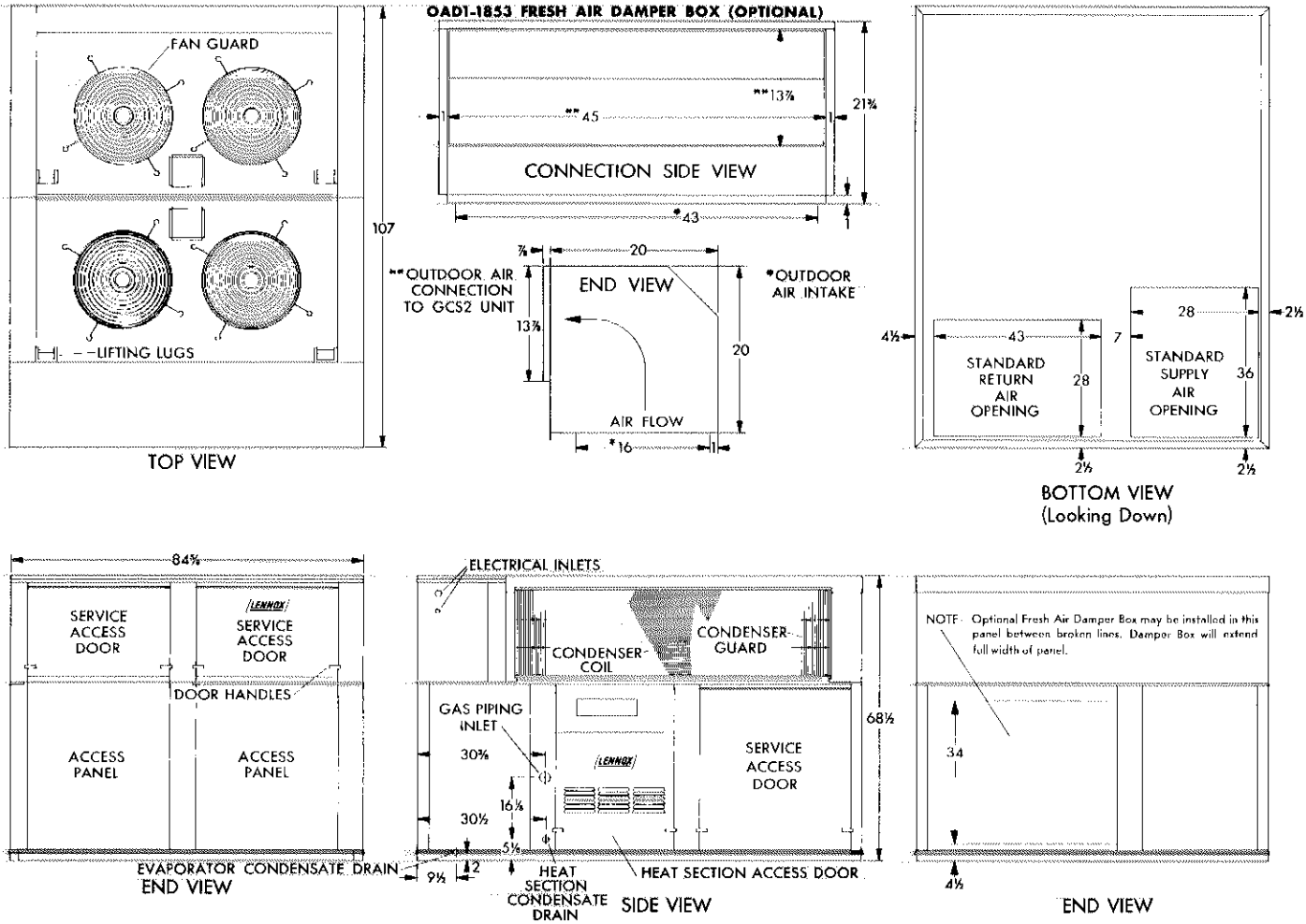
All wiring must conform to NEC and local electrical codes.

††If local electrical code permits may be class 2 wiring.

RATINGS

Evaporator Air 80F Dry Bulb		Outdoor Air Temperature Entering Condenser											
		85			95			105			115		
Entering Wet Bulb (F)	Total 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
64	5200	179,000	.78	15,000	171,000	.81	16,250	160,000	.84	17,450	149,000	.87	18,600
	6500	185,000	.83	15,350	175,000	.86	16,500	164,000	.89	17,750	153,000	.93	19,150
	7800	189,000	.87	15,600	178,000	.90	16,700	167,000	.94	18,000	156,000	.98	19,300
67	5200	188,000	.67	15,550	178,000	.69	16,700	167,000	.71	18,000	156,000	.73	19,300
	6500	193,000	.70	15,800	183,000	.73	17,000	171,000	.75	18,300	160,000	.78	19,700
	7800	197,000	.73	16,050	186,000	.76	17,200	175,000	.79	18,550	163,000	.83	20,000
70	5200	197,000	.55	16,050	186,000	.57	17,200	175,000	.59	18,550	163,000	.61	20,000
	6500	202,000	.58	16,250	190,000	.60	17,500	179,000	.62	18,950	167,000	.64	20,300
	7800	205,000	.60	16,400	194,000	.63	17,700	182,000	.65	19,200	170,000	.67	20,550

DIMENSIONS (in.)



BLOWER DATA

GCS2-1853-490 BLOWER PERFORMANCE

Air Volume (cfm)	STATIC PRESSURE EXTERNAL TO UNIT—Inches Water Gauge																	
	0		.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.25	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5200	590	1.15	625	1.25	660	1.40	695	1.55	725	1.75	750	1.95	785	2.15	820	2.35								
5400	615	1.30	640	1.40	680	1.55	715	1.75	740	1.90	770	2.10	800	2.30	835	2.50								
5600	635	1.45	665	1.55	700	1.70	730	1.90	760	2.10	790	2.30	820	2.45	850	2.65	885	2.90						
5800	655	1.55	690	1.70	720	1.90	750	2.10	775	2.25	805	2.45	830	2.60	860	2.80	895	3.10	930	3.45				
6000	675	1.70	710	1.90	745	2.10	770	2.25	800	2.45	820	2.60	850	2.80	875	3.0	905	3.25	950	3.65	975	3.9		
6200	700	1.90	730	2.10	760	2.25	790	2.45	815	2.60	845	2.80	870	3.05	895	3.25	925	3.50	955	3.75	985	4.05		
6400	725	2.10	755	2.30	785	2.45	810	2.65	835	2.80	860	3.0	890	3.25	915	3.45	940	3.70	965	3.95	995	4.25	1075	5.05
6600	750	2.35	775	2.50	800	2.65	830	2.85	860	3.10	880	3.25	905	3.45	930	3.65	955	3.90	980	4.15	1000	4.35	1085	5.25
6800	770	2.55	790	2.70	820	2.85	850	3.10	875	3.30	900	3.50	925	3.70	945	3.90	970	4.15	990	4.35	1015	4.60	1095	5.50
7000	795	2.75	820	2.95	850	3.15	870	3.35	900	3.60	920	3.75	940	3.90	960	4.10	985	4.35	1005	4.55	1035	4.85	1105	5.70
7200	815	3.0	840	3.15	870	3.45	895	3.65	920	3.80	945	4.05	965	4.25	980	4.45	1000	4.60	1025	4.85	1050	5.15		
7400	840	3.25	860	3.45	890	3.70	915	3.90	940	4.10	960	4.30	980	4.50	1000	4.70	1020	4.90	1045	5.20	1065	5.45		
7600	860	3.55	890	3.75	915	4.00	940	4.20	960	4.40	980	4.60	1000	4.80	1020	5.05	1040	5.30	1060	5.55				

NOTE: All cfm data is measured external to the unit using standard return air opening and with the air filters in place.

BLOWER DRIVE SELECTION CHART

Model No.	Nominal Motor Hp	*Maximum Usable Hp	Blower Pulley Bore x Diam. (in.)	Motor Pulley (o.d. in)	Belt Section & Size
GCS2-1853-490	3	3.45	$1^{3}/_{16}$ x 11.4	6.00	A-58
	5	5.75	$1^{3}/_{16}$ x 9.8 (2-groove)	5.6 (2-groove)	‡(2)—A-55
				6.0 (2-groove)	‡(2)—A-55
				6.4 (2-groove)	‡(2)—A-55

*In Canada maximum usable hp is nominal motor hp.
‡Matched set not a shelf stock item.