

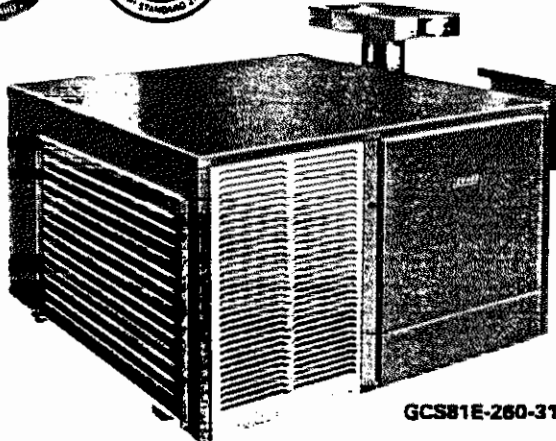
LENNOX

ALL SEASON — DX COOLING & GAS HEATING GCS81E SERIES — HORIZONTAL

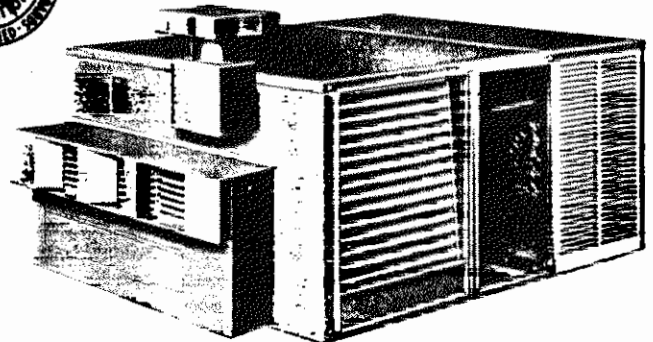
*23,500 to 60,000 Btuh Cooling Capacity
60,000 to 140,000 Btuh Input Heating Capacity

*At ARI Standard 210 Conditions

ENGINEERING DATA
COMBINATION
UNITS
ROOFTOP
Page 17
December 1, 1980
Supersedes 12-1-79



GCS81E-260-311



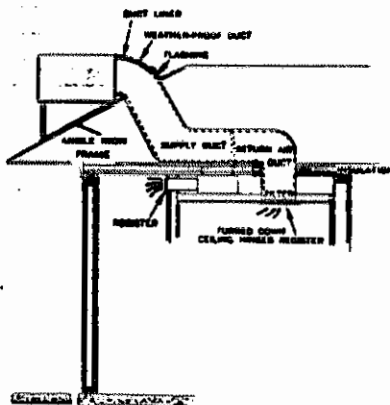
GCS81E-410-480

Combination Heating-Cooling Units Provide Low Cost, Space Saving Outdoor Installation

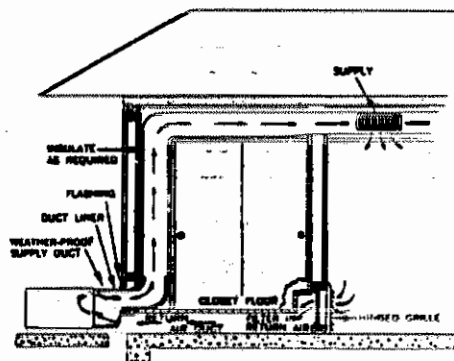
GCS81E series all season outdoor units can be installed with duct work extended through a wall in a crawl space, basement, utility room or attic. Compact single package units contain all refrigeration components, gas fired heating components and air mover. Wiring and gas piping inlets are provided in the cabinet. The gas piping connection is made at the opening of the combination gas valve internal to cabinet. Automatic solid state electronic igniter provides positive ignition of pilot burner on each operating cycle. Pilot gas is ignited and burns during each running cycle (intermittent pilot) of the unit. Main burner and pilot burner are extinguished during the off cycle. Main gas valve opens only when pilot burner is proven to be lit. Should a loss of flame occur the main valve closes and the pilot spark recurs immediately. Pilot operation is a fully automatic operation on demand for heat. Units are equipped with a self-contained balanced flue vent that will operate in any kind of weather condition. Vent cap assembly is field installed. In addition, GCS81E-281 and 311 models require a field installed wind deflector (furnished) over combustion air inlet. Electrical control box contains main contactor fan relay, 24v transformer, fan control and terminal block. Fan and limit controls are factory installed and accurately located. A heating-cooling thermostat is required and must be ordered extra. The weather resis-

tant cabinet is constructed of heavy gauge steel with a durable baked enamel finish. Flanges are provided on supply and return air openings for ease of duct connection. Powerful direct drive condenser fan discharges air through the condenser coil quietly and efficiently. The extra large condenser and evaporator coils ensure maximum air contact and heat transfer. Quiet and dependable compressor is hermetically sealed, overload protected and equipped with a crankcase heater. Evaporator blower delivers large air volumes quietly and with low power consumption. Air filter is optional equipment and must be installed in return air duct system. The design of the units are A.G.A. certified as combination heating-cooling units for outdoor installation. Heating ratings are according to Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations. Cooling system has been thoroughly tested and rated according to ARI Standard 210 Test Conditions, DOE test procedures and FTC labeling regulations. In addition, units have been sound tested according to ARI Standard 270 Conditions. Units coming within the scope of this Standard (135,000 Btuh or less) carry the ARI certification seal. DOE covered products are rated under 65,000 Btuh with single phase power input. In addition, each unit is test operated at the factory and shipped completely assembled, piped and wired.

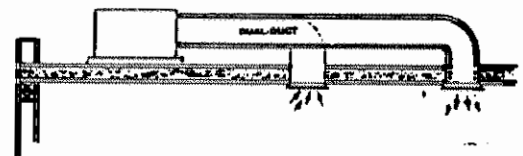
TYPICAL APPLICATIONS



Rooftop Installation



Slab Floor Construction



Flat Roof Installation

SPECIFICATIONS

GCS81E-261 and GCS81E-311

Model No.		GCS81E-261-60	GCS81E-261-80	GCS81E-311-60	GCS81E-311-80
Heating capacity input (Btuh)		60,000	80,000	60,000	80,000
†Heating capacity output (Btuh)		43,000	57,000	43,000	57,000
†AFUE		67.7	66.5	67.7	66.5
★ARI Standard 270 SRN		21	21	21	21
*ARI Standard 210 Ratings	Total cooling capacity (Btuh)	23,500	23,500	29,000	29,000
	Total unit watts	2900	2900	3400	3400
	††SEER (Btuh/Watts) — 1 phase models only	8.1	8.1	8.5	8.5
	††SEER (Btuh/Watts) — 3 phase models only	8.1	8.1	8.5	8.5
Blower wheel nominal diam. x width (in.)		11 x 7.75	11 x 7.75	11 x 7.75	11 x 7.75
Blower motor horsepower & Drive		1/4 direct	1/4 direct	1/4 direct	1/4 direct
Air volume (cfm)		805	805	975	975
Certified external static pressure (in. WC)		0.5	0.5	0.5	0.5
Refrigerant (R-22) charge		5 lbs. 8 oz.	5 lbs. 8 oz.	6 lbs. 4 oz.	6 lbs. 4 oz.
Condenser Coil	Net face area (sq. ft.)	4.88	4.88	5.33	5.33
	No. of rows & fins per inch	4 — 14	4 — 14	4 — 12	4 — 12
Condenser Fan	Diameter (in.)	20	20	20	20
	Motor horsepower	1/4	1/4	1/4	1/4
Evaporator Coil	Net face area (sq. ft.)	2.00	2.00	2.00	2.00
	No. of rows & fins per inch	3 — 12	3 — 12	4 — 12	4 — 12
Gas supply connection FPT (in.) (Natural)		1/2	1/2	1/2	1/2
Condensate drain size FPT (in.)		3/4	3/4	3/4	3/4
Net weight of basic unit (lbs.) 1 Package		376	387	387	398

★Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210; 450 cfm (maximum) evaporator air volume per ton of cooling capacity, 95F outdoor air temperature and 80F db/67F wb entering evaporator air.

†Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

††Seasonal Energy Efficiency Ratio based on DOE test procedures and FTC labeling regulations.

GCS81E-411-413 and GCS81E-461-463

Model No.		GCS81E-411-60	GCS81E-411-80	GCS81E-411-100	GCS81E-461-60	GCS81E-461-80	GCS81E-461-100
		GCS81E-413-60	GCS81E-413-80	GCS81E-413-100	GCS81E-463-60	GCS81E-463-80	GCS81E-463-100
Heating capacity input (Btuh)		60,000	80,000	100,000	60,000	80,000	100,000
†Heating capacity output (Btuh)		45,000	59,000	77,000	45,000	59,000	77,000
†AFUE		70.9	68.1	67.9	70.9	68.1	67.9
★ARI Standard 270 SRN		21	21	21	21	21	21
*ARI Standard 210 Ratings	Total cooling capacity (Btuh)	38,000	38,000	38,000	43,000	43,000	43,000
	Total unit watts	4630	4630	4630	5380	5380	5380
	††SEER (Btuh/Watts) 1 phase models only	8.65	8.65	8.65	8.35	8.35	8.35
	††SEER (Btuh/Watts) 3 phase models only	8.2	8.2	8.2	8.0	8.0	8.0
Blower wheel nominal diam. x width (in.)		11 x 10.5	11 x 10.5	11 x 10.5	11 x 10.5	11 x 10.5	11 x 10.5
Blower motor horsepower & Drive		1/3 direct	1/3 direct	1/3 direct	1/2 direct	1/2 direct	1/2 direct
Air volume (cfm)		1340	1340	1340	1600	1600	1600
Certified external static pressure (in. WC)		0.5	0.5	0.5	0.5	0.5	0.5
Refrigerant (R-22) charge		4 lbs. 8 oz.	4 lbs. 8 oz.	4 lbs. 8 oz.	6 lbs. 0 oz.	6 lbs. 0 oz.	6 lbs. 0 oz.
Condenser Coil	Net face area (sq. ft.)	5.33	5.33	5.33	5.33	5.33	5.33
	No. of rows & fins per inch	3 — 16	3 — 16	3 — 16	4 — 14	4 — 14	4 — 14
Condenser Fan	Diameter (in.)	20	20	20	20	20	20
	Motor horsepower	1/4	1/4	1/4	1/4	1/4	1/4
Evaporator Coil	Net face area (sq. ft.)	2.64	2.64	2.64	2.64	2.64	2.64
	No. of rows & fins per inch	3 — 14	3 — 14	3 — 14	4 — 14	4 — 14	4 — 14
Gas supply connection FPT (in.) (Natural)		1/2	1/2	1/2	1/2	1/2	1/2
Condensate drain size FPT (in.)		3/4	3/4	3/4	3/4	3/4	3/4
Net weight of basic unit (lbs.) 1 Package		518	518	518	570	570	570

★Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210; 450 cfm (maximum) evaporator air volume per ton of cooling capacity, 95F outdoor air temperature and 80F db/67F wb entering evaporator air.

†Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

††Seasonal Energy Efficiency Ratio based on DOE test procedures and FTC labeling regulations.

†††Energy Efficiency Ratio in accordance with ARI Standard 210.

SPECIFICATIONS

GCS81E-511-513 and GCS81E-651-653

Model No.		GCS81E-511-120 GCS81E-513-120	GCS81E-511-140 GCS81E-513-140	GCS81E-651-120 GCS81E-653-120	GCS81E-651-140 GCS81E-653-140
Heating capacity input (Btuh)		120,000	140,000	120,000	140,000
†Heating capacity output (Btuh)		87,000	102,000	87,000	102,000
†AFUE		67.8	67.7	67.8	67.7
★ARI Standard 270 SRN		22	22	22	22
*ARI Standard 210 Ratings	Total cooling capacity (Btuh)	53,000	53,000	60,000	60,000
	Total unit watts	6450	6450	7500	7500
	††SEER (Btuh/Watts) — 1 phase models only	8.05	8.05	8.15	8.15
	††TEER (Btuh/Watts) — 3 phase models only	8.2	8.2	8.0	8.0
Blower wheel nominal diam. x width (in.)		13.25 x 15	13.25 x 15	13.25 x 15	13.25 x 15
Blower motor horsepower & Drive		1/2 belt	1/2 belt	3/4 belt	3/4 belt
Air volume (cfm)		1850	1850	1950	1950
Certified external static pressure (in. WC)		0.5	0.5	0.5	0.5
Refrigerant (R-22) charge		7 lbs. 10 oz.	7 lbs. 10 oz.	9 lbs. 8 oz.	9 lbs. 8 oz.
Condenser Coil	Net face area (sq. ft.)	5.33	5.33	5.33	5.33
	No. of rows & fins per inch	5 — 12	5 — 12	6 — 12	6 — 12
Condenser Fan	Diameter (in.)	21-1/4	21-1/4	21-1/4	21-1/4
	Motor horsepower	1/4	1/4	1/2	1/2
Evaporator Coil	Net face area (sq. ft.)	4.10	4.10	4.10	4.10
	No. of rows & Fins per inch	4 — 9	4 — 9	6 — 10	6 — 10
Gas supply connection FPT (in.) (Natural)		1/2	1/2	1/2	1/2
Condensate drain size FPT (in.)		3/4	3/4	3/4	3/4
Net weight of basic unit (lbs.) 1 Package		816	816	816	816

★Sound Rating Number in accordance with ARI Standard 270.

*Rated in accordance with ARI Standard 210; 450 cfm (maximum) evaporator air volume per ton of cooling capacity, 95F outdoor air temperature and 80F db/67F wb entering evaporator air.

†Annual Fuel Utilization Efficiency based on DOE test procedures and FTC labeling regulations.

††Seasonal Energy Efficiency Ratio based on DOE test procedures and FTC labeling regulations.

†††Energy Efficiency Ratio in accordance with ARI Standard 210.

ELECTRICAL DATA

Model No.		GCS81E-261-60 GCS81E-261-80	GCS81E-311-60 GCS81E-311-80	GCS81E-411-60 GCS81E-411-80 GCS81E-411-100	GCS81E-413-60 GCS81E-413-80 GCS81E-413-100	GCS81E-461-60 GCS81E-461-80 GCS81E-461-100	GCS81E-463-60 GCS81E-463-80 GCS81E-463-100
Line voltage data		208/230v 60 hz — 1 ph	208/230v 60 hz — 1 ph	208/230v 60 hz — 1 ph	208/230v 60 hz — 3 ph	208/230v 60 hz — 1 ph	208/230v 60 hz — 3 ph
Compressor	Rated load amps	11.0	11.8	18.5	11.5	21.5	13.8
	Locked rotor amps	57.0	64.0	84.0	66.0	95.0	82.0
Condenser coil fan full load amps		2.5	2.5	1.9	1.9	2.0	2.0
Evaporator coil blower full load amps		2.5	2.5	3.2	3.2	3.1	3.1
Maximum unit amps		25	30	45	30	50	35
*Minimum circuit ampacity		18.7	19.5	28.1	19.5	32.0	22.5

*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

Model No.		GCS81E-511-120 GCS81E-511-140	GCS81E-613-120 GCS81E-613-140	GCS81E-651-120 GCS81E-651-140	GCS81E-653-120 GCS81E-653-140
Line voltage data		208/230v 60 hz — 1 ph	208/230v 60 hz — 3 ph	208/230v 60 hz — 1 ph	208/230v 60 hz — 3 ph
Compressor	Rated load amps	28.0	16.6	30.9	18.8
	Locked rotor amps	132.0	103.0	149.0	104.0
Condenser coil fan full load amps		2.0	2.0	2.7	2.7
Evaporator coil blower full load amps		3.7	3.7	4.0	4.0
Maximum unit amps		65	40	75	45
*Minimum circuit ampacity		41.0	26.5	45.3	30.2

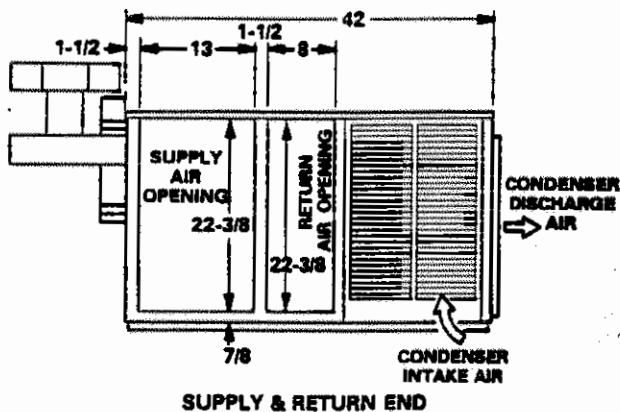
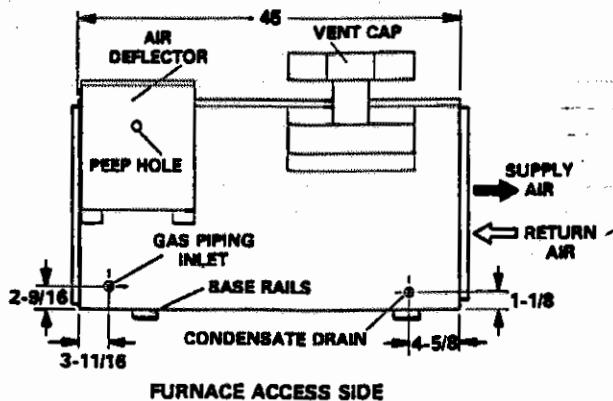
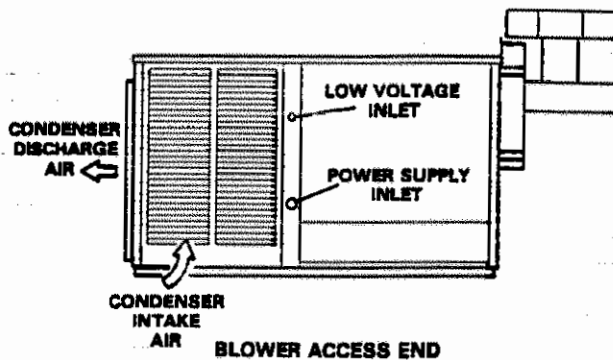
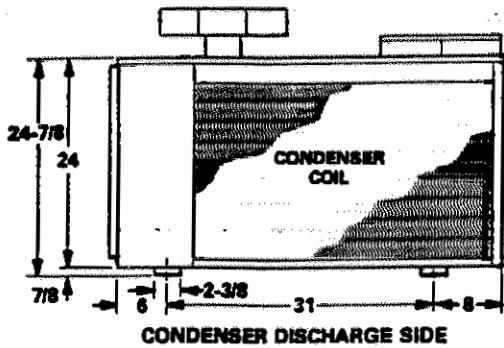
*Refer to National Electric Code manual to determine wire, fuse and disconnect size requirements.

INSTALLATION CLEARANCES (Inches)

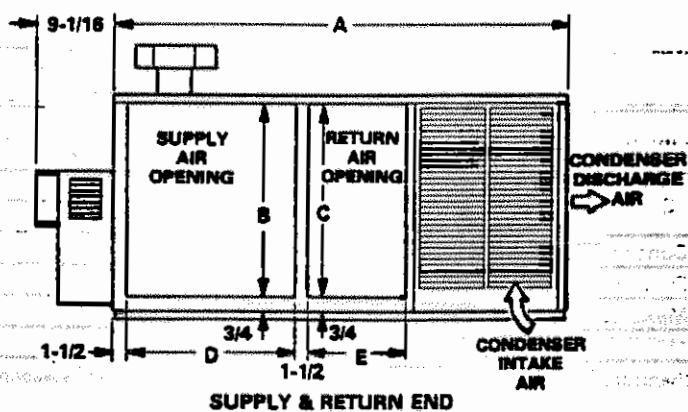
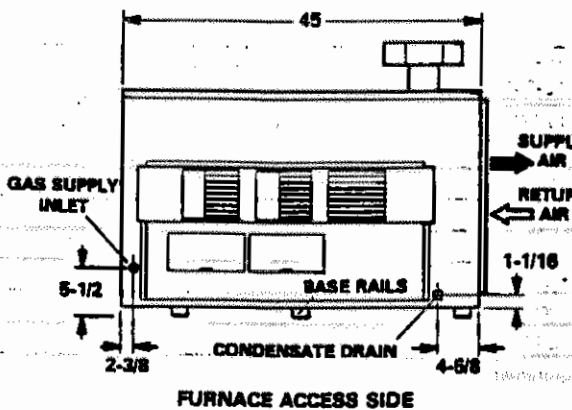
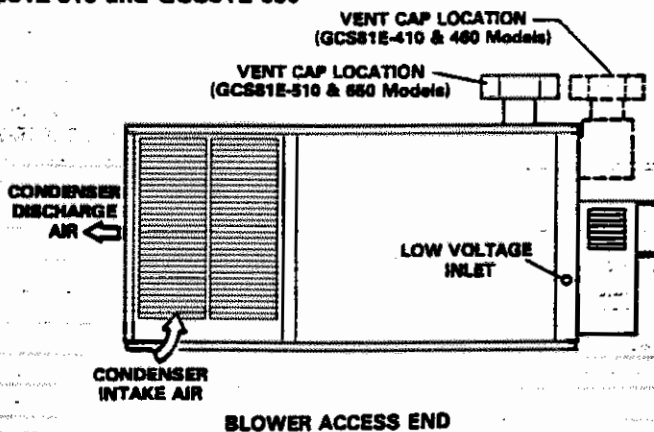
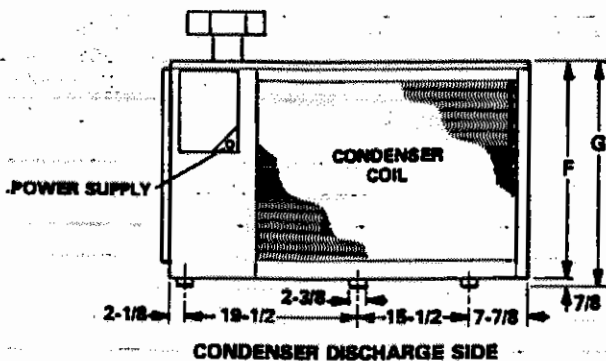
Louvered condenser air intake sides.....	24"
Condenser air discharge end	36"
Gas heating section access end.....	24"

DIMENSIONS (inches)

GCS81E-261 and GCS81E-311



GCS81E-410, GCS81E-460, GCS81E-510 and GCS81E-650



Model No.	A	B	C	D	E	F	G
GCS81E-410	52-1/4	22-3/4	22-3/4	19	11-1/2	24-7/8	25-3/4
GCS81E-460	52-1/4	22-3/4	22-3/4	19	11-1/2	24-7/8	25-3/4
GCS81E-510	72-1/4	21-3/8	21-3/4	27	17-1/2	25-1/4	28-1/8
GCS81E-650	72-1/4	21-3/8	21-3/4	27	17-1/2	25-1/4	28-1/8