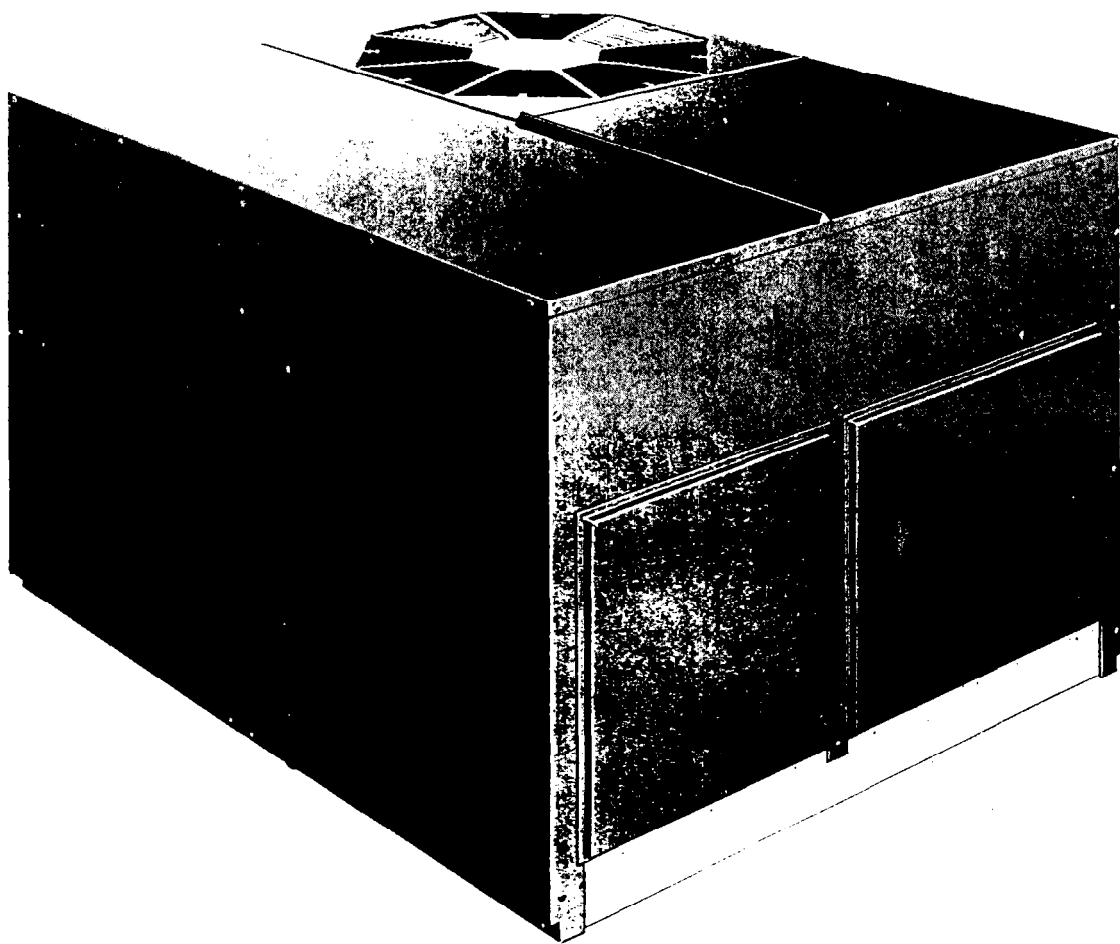


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**INSTALLATION INSTRUCTIONS
FOR
COMBINATION HEATING AND
COOLING ROOFTOP UNITS
EQUIPPED WITH INTERMITTENT IGNITION
MODEL SERIES "(-)RGE-**



INTRODUCTION

WARNING: DO NOT CONNECT TO OR USE IN CONJUNCTION WITH THIS UNIT ANY DEVICES FOR THE PURPOSE OF SAVING ENERGY OR INCREASING OPERATING EFFICIENCIES, WHICH HAVE NOT BEEN TESTED AND APPROVED BY US OR DESIGN CERTIFIED FOR USE WITH THIS UNIT. SERIOUS DAMAGE, REDUCED UNIT PERFORMANCE AND HAZARDOUS CONDITIONS MAY RESULT FROM THE USE OF DEVICES WHICH HAVE NOT BEEN APPROVED OR CERTIFIED. FOR EXAMPLE, WATER SPRAYED ON AIR-COOLED CONDENSER COILS CAN CAUSE HARMFUL DEPOSITS IN THE FIN AREA AND RESTRICT OR STOP NECESSARY AIR FLOW.

This booklet contains the installation and operating instructions for your combination gas-electric year-round air conditioner. There are a few precautions that should be taken to derive maximum satisfaction from it. Improper installation can result in unsatisfactory operation or dangerous conditions and make the related warranty inapplicable.

Read this booklet and any instructions packaged with separate equipment required to make up the system prior to installation. Give this booklet to the owner and explain its provisions. The owner should retain this booklet for future reference.

CHECKING PRODUCT RECEIVED

Upon receiving the unit, inspect it for any damage from shipment. Claims for damage, either shipping or concealed, should be filed immediately with the shipping company. Check the unit model number, heating size, electrical characteristics, and accessories to determine if they are correct.

I. SPECIFICATIONS

A. GENERAL:

The (-)RGE-Series Combination Gas Heating/Electric Cooling Rooftop is available in 50, 75, 100, 125 and 150,000 Btu/Hr. heating inputs and cooling capacities of 1½, 2, 2½, 3, 3½, 4 and 5 nominal tons of cooling. Units are convertible from end supply and return to bottom supply and return by relocation of cap panels. See cover installation detail.

The Units are weatherized for mounting outside of the building. **Units are not to be installed inside the structure.**

The information on the rating plate is in compliance with the FTC & DOE rating for single phase units. The following information is for three phase units which **are not** covered under the DOE certification program.

1. The energy consumption of the ignition system used with this unit is 9 watts.
2. The efficiency rating of this unit is a product thermal efficiency rating determined under continuous operating conditions independent of any installed system.

B. MAJOR COMPONENTS:

The unit includes a hermetically-sealed refrigerating system (consisting of a compressor, condenser coil, evaporator coil with capillary tube assembly), an indoor blower, a condenser fan, a heat exchanger assembly, gas burner and control assembly, combustion air motor and fan, and all necessary internal electrical wiring. The cooling system of these units is factoryevacuated, charged and performance tested. Refrigerant amount and type are indicated on rating plate.

MODEL IDENTIFICATION

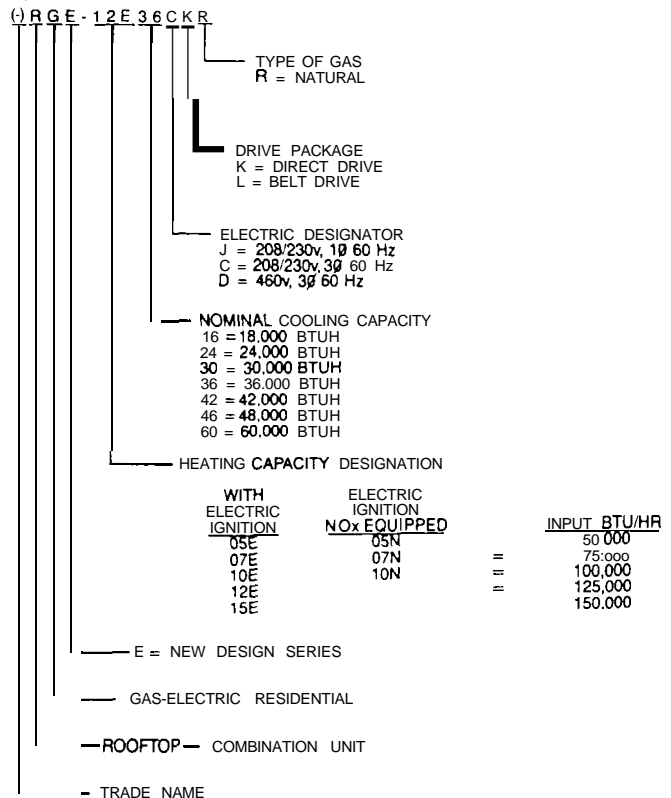


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Evaporator Blower Air Delivery- Direct Drive

MODELNUMBER	(-)RGE-05E18JK/(-)RGE-05N18JK ①								(-)RGE-05E24JK/(-)RGE-05N24JK ①							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	LOW		LOW		LOW		LOW		LOW		LOW		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	700	255	815	295	700	255	815	295	700	255	815	295	—	—	—	—
.20 E.S.P.	680	245	790	280	680	245	790	280	680	245	790	280	945	350	—	—
.30 E.S.P.	645	235	750	265	645	235	750	265	645	235	750	265	910	330	955	360
.40 E.S.P.	600	220	695	240	600	220	695	240	600	220	695	240	835	310	895	340
.50 E.S.P.	545	200	635	230	545	200	635	230	545	200	635	230	770	290	820	320

MODEL NUMBER	(-)RGE-07E24JK								(-)RGE-05E30JK/(-)RGE-05N30JK ①							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		LOW		LOW		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1025	370	1075	400	—	—	—	—	730	260	855	305	1115	405	1215	455
.20 E.S.P.	945	350	1020	380	945	350	—	—	720	255	840	290	1080	385	1170	435
.30 E.S.P.	910	330	955	360	910	330	955	360	695	245	815	275	1035	365	1115	410
.40 E.S.P.	835	310	895	340	835	310	895	340	665	230	780	260	980	340	1045	385
.50 E.S.P.	770	290	820	320	770	290	820	320	630	215	740	240	915	315	970	360

MODELNUMBER	(-)RGE-07E30JK								(-)RGE-10E30JK							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1115	405	1215	455	1115	405	1215	455	1115	405	1215	455	1115	405	1215	455
.20 E.S.P.	1080	385	1170	435	1080	385	1170	435	1080	385	1170	435	1080	385	1170	435
.30 E.S.P.	1035	365	1115	410	1035	365	1115	410	1035	365	1115	410	1035	365	1115	410
.40 E.S.P.	980	340	1045	385	980	340	1045	385	980	340	1045	385	980	340	1045	385
.50 E.S.P.	915	315	970	360	915	315	970	360	915	315	970	360	915	315	970	360

MODELNUMBER	(-)RGE-05E36JK,CK/(-)RGE-05N36JK ①								(-)RGE-07E36JK,CK/(-)RGE-07N36JK ①							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	LOW		LOW		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	650	235	755	290	1145	485	1290	575	1145	485	1290	575	1145	485	1290	575
.20 E.S.P.	630	230	735	280	1125	475	1270	555	1125	475	1270	555	1125	475	1270	555
.30 E.S.P.	610	225	720	275	1100	460	1240	540	1100	460	1240	540	1100	460	1240	540
.40 E.S.P.	585	220	700	270	1075	445	1210	525	1075	445	1210	525	1075	445	1210	525
.50 E.S.P.	555	215	680	265	1045	430	1175	505	1045	430	1175	505	1045	430	1175	505

MODEL NUMBER	(-)RGE-10E36JK, CK								(-)RGE-12E36JK, CK							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1145	485	1290	575	1145	485	1290	575	1385	530	1525	600	1385	530	1525	600
.20 E.S.P.	1125	475	1270	555	1125	475	1270	555	1350	510	1480	575	1350	510	1480	575
.30 E.S.P.	1100	460	1240	540	1100	460	1240	540	1300	490	1430	540	1300	490	1430	540
.40 E.S.P.	1075	445	1210	525	1075	445	1210	525	1255	465	1360	515	1255	465	1360	515
.50 E.S.P.	1045	430	1175	505	1045	430	1175	505	1185	440	1290	495	1185	440	1290	495

① For California only

- NOTES: 1. Data shown is with dry coil conditions; see chart on page 4 for wet coil pressure drop
 2. Data does not include filter pressure drop.
 3. Data shown is with front flow arrangement; add .07 to static pressure for downflow.
 4. Do not exceed cooling airflow shown in Table, or condensate blow-off may occur.

Evaporator Blower Air Delivery-Direct Drive (Continued)

MODEL NUMBER	(-)RGE-07E42JK, CK/(-)RGE-07N42JK ①								(-)RGE-10E42JK, CK							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1430	530	1580	600	1430	530	1580	600	1430	530	1580	600	1430	530	1580	600
.20 E.S.P.	1395	515	1525	575	1395	515	1525	575	1395	515	1525	575	1395	515	1525	575
.30 E.S.P.	1350	495	1480	555	1350	495	1480	555	1350	495	1480	555	1350	495	1480	555
.40 E.S.P.	1295	475	1425	530	1295	475	1425	530	1295	475	1425	530	1295	475	1425	530
.50 E.S.P.	1240	455	1370	510	1240	455	1370	510	1240	455	1370	510	1240	455	1370	510

MODEL NUMBER	(-)RGE-12E42JK, CK								(-)RGE-07E48JK, CK/(-)RGE-07N48JK ①							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		LOW		LOW		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1430	530	1580	600	1430	530	1580	600	1060	305	1205	370	1635	560	1830	665
.20 E.S.P.	1395	515	1525	575	1395	515	1525	575	1015	303	1170	368	1600	555	1785	650
.30 E.S.P.	1350	495	1480	555	1350	495	1480	555	970	300	1130	365	1555	550	1735	640
.40 E.S.P.	1295	475	1425	530	1295	475	1425	530	920	295	1085	360	1510	540	1675	630
.50 E.S.P.	1240	455	1370	510	1240	455	1370	510	860	290	1035	355	1460	530	1615	620

MODEL NUMBER	(-)RGE-12E48JK, CK								(-)RGE-15E48JK, CK							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1635	560	1830	665	1635	560	1830	665	1635	560	1830	665	1635	560	1830	665
.20 E.S.P.	1600	555	1785	650	1600	555	1785	650	1600	555	1785	650	1600	555	1785	650
.30 E.S.P.	1555	550	1735	640	1555	550	1735	640	1555	550	1735	640	1555	550	1735	640
.40 E.S.P.	1510	540	1675	630	1510	540	1675	630	1510	540	1675	630	1510	540	1675	630
.50 E.S.P.	1460	530	1615	620	1460	530	1615	620	1460	530	1615	620	1460	530	1615	620

MODEL NUMBER	(-)RGE-10E60JK, CK/(-)RGE-10N60JK ①								(-)RGE-12E60JK, CK							
OPERATION	HEATING				COOLING				HEATING				COOLING			
VOLTAGE	208		230		208		230		208		230		208		230	
MOTOR SPEED	LOW		LOW		HIGH		HIGH		HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	1230	585	1435	690	2165	1060	2280	1140	2165	1060	2280	1140	2165	1060	2280	1140
.20 E.S.P.	1215	570	1415	665	2115	1020	2215	1105	2115	1020	2215	1105	2115	1020	2215	1105
.30 E.S.P.	1200	550	1385	640	2045	980	2135	1070	2045	980	2135	1070	2045	980	2135	1070
.40 E.S.P.	1170	535	1355	620	1970	940	2060	1035	1970	940	2060	1035	1970	940	2060	1035
.50 E.S.P.	1140	515	1320	600	1895	900	1985	1000	1895	900	1985	1000	1895	900	1985	1000

MODEL NUMBER	(-)RGE-15E60JK, CK							
OPERATION	HEATING				COOLING			
VOLTAGE	208		230		208		230	
MOTOR SPEED	HIGH		HIGH		HIGH		HIGH	
CFM/WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
.10 E.S.P.	2165	1060	2280	1140	2165	1060	2280	1140
.20 E.S.P.	2115	1020	2215	1105	2115	1020	2215	1105
.30 E.S.P.	2045	980	2135	1070	2045	980	2135	1070
.40 E.S.P.	1970	940	2060	1035	1970	940	2060	1035
.50 E.S.P.	1895	900	1985	1000	1895	900	1985	1000

WET COIL PRESSURE DROP	
MODEL NUMBER	INCHES H ₂ O
(-)RGE-XXX18XX	.08
(-)RGE-XXX24XX	.15
(-)RGE-XXX30XX	.10
(-)RGE-XXX36XX	.10
(-)RGE-12X36XX	.08
(-)RGE-XXX42XX	.15
(-)RGE-XXX48XX	.08
(-)RGE-XXX60XX	.15

① For California only

- NOTES: 1. Data shown is with dry coil conditions; see chart on page 4 for wet coil pressure drop.
 2. Data does not include filter pressure drop.
 3. Data shown is with front flow arrangement; add .07 to static pressure for downflow.
 4. Do not exceed cooling airflow shown in Table, or condensate blow-off may occur.

TABLE III-Evaporator Blower Air Delivery-Belt Drive

AIR FLOW CFM	(-)RGE-05E36CL, DL/07E36CL, DL/10E36 CL, DL																							
	EXTERNAL STATIC PRESSURE—INCHES OF WATER COLUMN																							
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.10		1.20	
	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
900	—	—	—	—	—	—	900	315	915	340	950	365	980	390	1045	405	1085	425	1130	455	1160	470	1200	490
1000	—	—	—	—	880	320	920	340	955	380	995	400	1030	435	1070	450	1110	475	1150	500	1185	520	1205	540
1100	—	—	855	335	900	360	935	390	975	425	1015	450	1060	480	1105	500	1125	515	1170	545	1210	580	1250	610
1200	835	340	875	380	920	420	950	450	990	480	1045	510	1100	535	1125	550	1150	575	1200	590	1240	610	1290	740
1300	850	425	905	440	950	490	990	520	1035	540	1095	580	1130	605	1150	615	1190	650	1240	670	1280	700	—	—

AIR FLOW CFM	(-)RGE-12E36CL, DL																							
	EXTERNAL STATIC PRESSURE—INCHES OF WATER COLUMN																							
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.10		1.20	
	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
900	—	—	—	—	—	—	—	—	835	490	875	515	925	540	965	560	1000	585	1055	605	1090	630	1125	655
1000	—	—	—	—	—	—	815	495	860	520	900	550	945	575	990	600	1030	625	1070	650	1110	685	1150	700
1100	—	—	740	475	785	500	830	530	875	555	930	580	970	615	1010	640	1060	670	1095	700	1135	735	1180	765
1200	730	510	775	535	815	560	860	600	910	610	960	640	990	665	1035	690	1090	715	1125	760	1170	800	1210	845
1300	760	540	805	570	840	600	900	630	945	660	990	690	1020	720	1065	750	1115	785	1155	840	1200	900	—	—
1400	790	590	835	620	880	650	935	680	980	715	1020	735	1045	780	1100	835	1145	875	1185	940	1225	1000	—	—
1500	825	635	870	675	920	700	970	750	1020	780	1050	810	1080	850	1145	935	1170	980	1215	1050	—	—	—	—

AIR FLOW CFM	(-)RGE-07E42CL/10E42CL/12E42CL																							
	EXTERNAL STATIC PRESSURE—INCHES OF WATER COLUMN																							
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.10		1.20	
	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
1000	—	—	—	—	—	—	—	—	—	—	900	550	945	575	990	600	1030	625	1070	650	1110	685	1150	700
1100	—	—	—	—	—	—	—	—	875	555	930	580	970	615	1010	640	1060	670	1095	700	1135	735	1180	765
1200	—	—	—	—	—	—	860	600	910	610	960	640	990	665	1035	690	1090	715	1125	760	1170	800	1210	845
1300	—	—	805	570	840	600	900	630	945	660	990	690	1020	720	1065	750	1115	785	1155	840	1200	900	1240	975
1400	790	590	835	620	880	650	935	680	980	715	1020	735	1045	780	1100	835	1145	875	1185	940	1225	1000	—	—
1500	825	635	870	675	920	700	970	750	1020	780	1050	810	1080	850	1145	935	1170	980	1215	1050	—	—	—	—
1600	865	705	915	740	960	780	1010	825	1065	860	1080	890	1120	940	1175	1050	—	—	—	—	—	—	—	—

- NOTES: 1. Data shown is with dry coil conditions, see chart on page 4 for wet coil pressure drop.
 2. Data does not include filter pressure drop.
 3. Data shown is with front flow arrangement, add .07 to static pressure for downflow.
 4. Data above heavy line obtainable only by using held supplied drive sheave of smaller diameter.

BLOWER RPM							
05(-)36, 07(-)36, 10(-)36							
VOLTAGE	TURNS OPEN—RPM						
	0	1	2	3	4	5	6
208	1270	1210	1150	1105	1050	990	925
230	1280	1220	1160	1115	1060	1000	935

BLOWER RPM							
12(-)36							
VOLTAGE	TURNS OPEN—RPM						
	0	1	2	3	4	5	6
208	1180	1120	1075	1025	965	915	850
230	1195	1135	1090	1040	980	930	865

BLOWER RPM							
07(-)42, 10(-)42, 12(-)42							
VOLTAGE	TURNS OPEN—RPM						
	0	1	2	3	4	5	6
208	1240	1180	1130	1075	1015	960	895
230	1260	1200	1150	1095	1035	980	915

Evaporator Blower Air Delivery-Belt Drive (Continued)

AIR FLOW CFM	(-)RGE-07E48CL, DL/12E48CL, DL/15E48 CL, DL																							
	EXTERNAL STATIC PRESSURE—INCHES OF WATER COLUMN																							
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.10		1.20	
	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
1200	—	—	—	—	—	—	—	—	795	390	855	400	885	425	940	460	970	485	1025	490	1070	540	1100	575
1300	—	—	—	—	—	—	775	370	815	405	865	425	905	450	960	490	990	515	1035	535	1080	590	1110	620
1400	—	—	—	—	770	370	800	400	835	430	880	460	925	480	975	525	1010	555	1045	580	1090	640	1120	665
1500	—	—	760	345	795	380	830	420	860	455	900	495	945	525	990	565	1025	595	1060	640	1105	700	1130	725
1600	755	320	785	365	815	405	850	450	880	490	920	535	965	580	1010	620	1045	660	1075	700	1115	760	1140	795
1700	780	375	805	395	835	445	870	490	900	545	935	585	985	630	1025	685	1060	710	1090	760	1125	830	—	—
1800	790	390	820	435	850	490	880	540	920	590	960	640	1005	695	1040	760	1080	790	1110	830	—	—	—	—
1900	815	420	840	480	870	540	905	595	940	655	990	710	1025	770	1060	835	1100	890	1135	915	—	—	—	—

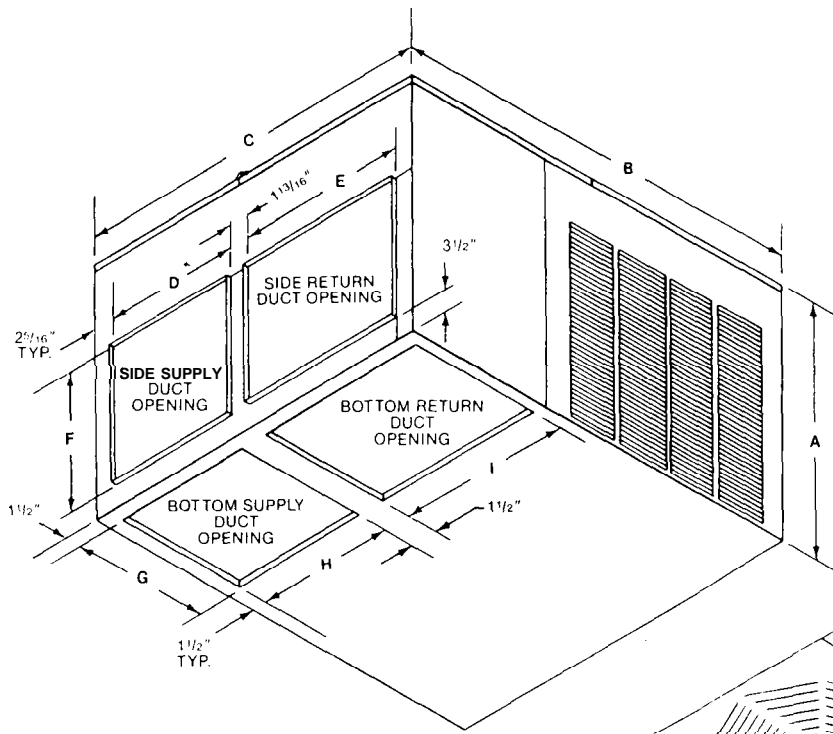
AIR FLOW CFM	(-)RGE-10E60CL, DL/12E60CL, DL/15E60 CL, DL																							
	EXTERNAL STATIC PRESSURE—INCHES OF WATER COLUMN																							
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00		1.10		1.20	
	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
1500	—	—	—	—	—	—	835	435	900	470	935	510	985	560	1030	620	1070	640	1105	690	1135	740	1180	755
1600	—	—	—	—	—	—	870	485	925	535	965	580	1015	630	1055	680	1090	700	1125	750	1155	780	1195	820
1700	—	—	—	—	850	500	900	550	955	600	995	660	1040	700	1080	750	1115	770	1145	820	1175	840	1215	895
1800	—	—	—	—	885	590	935	620	980	670	1020	735	1065	775	1100	820	1135	840	1165	900	1195	935	1240	975
1900	—	—	870	620	920	640	965	695	1010	745	1050	810	1090	850	1125	880	1155	920	1185	990	1215	1010	—	—
2000	880	580	910	675	955	715	1000	775	1035	825	1080	885	1120	925	1150	965	1175	1015	1205	1085	1235	1110	—	—
2100	920	670	950	750	990	800	1030	860	1065	910	1110	970	1145	1010	1170	1060	1200	1115	1225	1180	—	—	—	—
2200	960	790	990	855	1025	905	1065	965	1090	1005	1140	1060	1170	1110	1195	1175	1220	1220	—	—	—	—	—	—
2300	1000	905	1030	960	1060	1015	1095	1100	1120	1115	1165	1160	1200	1220	1215	1300	—	—	—	—	—	—	—	—

- NOTES: 1. Data shown is with dry coil conditions, see chart on page 4 for wet coil pressure drop.
 2. Data does not include filter pressure drop.
 3. Data shown is with front flow arrangement, add .07 to static pressure for downflow.
 4. Data above heavy line obtainable only by using field supplied drive sheave of smaller diameter.

BLOWER RPM							
07(-)48, 12(-)48, 15(-)48							
VOLTAGE	TURNS OPEN—RPM						
	0	1	2	3	4	5	6
208	1120	1080	1035	990	940	900	850
230	1135	1095	1050	1005	955	915	865

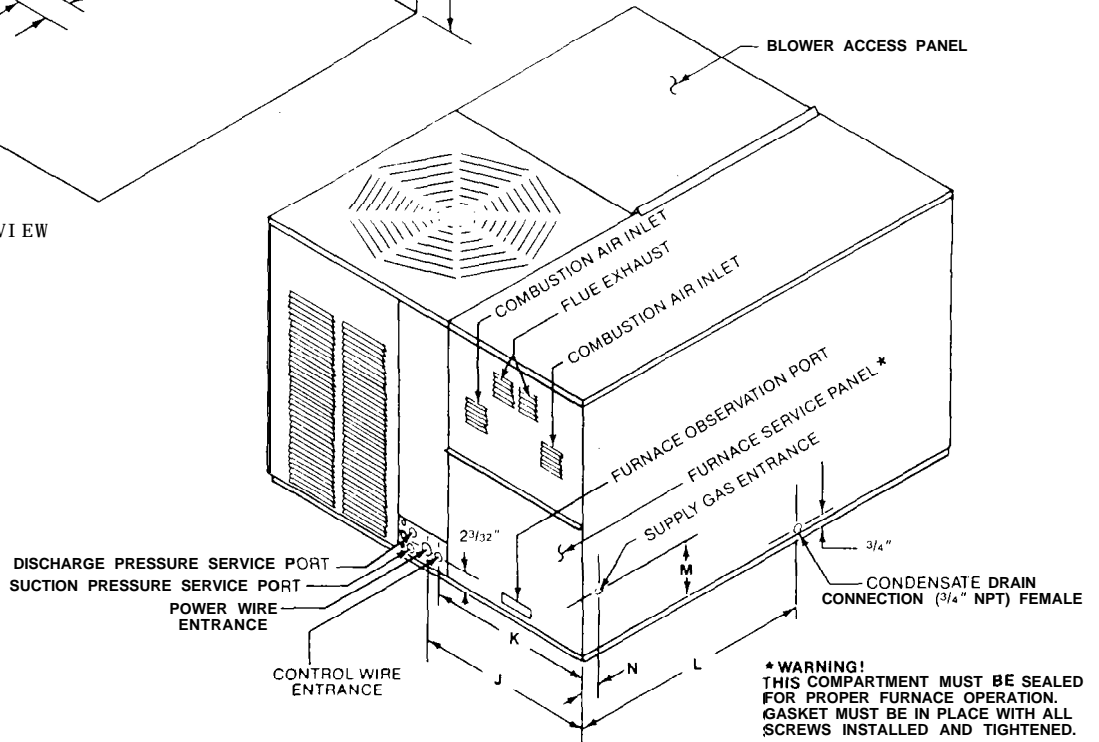
BLOWER RPM							
10(-)60, 12(-)60, 15(-)60							
VOLTAGE	TURNS OPEN—RPM						
	0	1	2	3	4	5	6
208	1225	1180	1130	1075	1020	975	920
230	1235	1190	1140	1085	1030	985	930

Unit Dimensions



BOTTOMVIEW

FOR CLEARANCES,
SEE PAGES 8 AND 9.



***WARNING!**
THIS COMPARTMENT MUST BE SEALED
FOR PROPER FURNACE OPERATION.
GASKET MUST BE IN PLACE WITH ALL
SCREWS INSTALLED AND TIGHTENED.

MODEL NUMBER (-)RGE-				
		05E30		07E48
		05N30		07N48
		07E30		12E48
		10E30		15E48
DIM.	05E18	05E36	12E36	15E48
	05N18	05N36	07E42	10E60
	05E24	07E36	07N42	10N60
	05N24	07N36	10E42	12E60
	07E24	10E36	12E42	15E60
A	29 ¹³ / ₁₆ "	29 ³ / ₈ "	29 ³ / ₁₆ "	32 ³ / ₁₆ "
B	49 ³ / ₁₆ "	49 ⁵ / ₁₆ "	51"	55 ¹ / ₈ "
C	37 ³ / ₁₆ "	43 ¹ / ₂ "	49 ¹ / ₂ "	58"
D	13 ¹¹ / ₁₆ "	16 ³ / ₁₆ "	21 ¹ / ₁₆ "	24 ³ / ₁₆ "
E	17 ¹ / ₁₆ "	20 ⁹ / ₁₆ "	22 ¹ / ₁₆ "	26 ³ / ₁₆ "
F	15 ¹ / ₁₆ "	15 ¹ / ₁₆ "	15 ¹ / ₁₆ "	17 ¹ / ₁₆ "
G	16"	16"	16"	18"
H	14 ¹ / ₃₂ "	16 ⁷ / ₈ "	21 ³ / ₈ "	25 ¹ / ₈ "
I	18 ¹ / ₃₂ "	20 ⁷ / ₈ "	22 ³ / ₈ "	27 ¹ / ₈ "
J	17 ³ / ₁₆ "	21 ³ / ₄ "	26 ¹ / ₁₆ "	30 ¹⁵ / ₁₆ "
K	15 ¹³ / ₁₆ "	19 ³ / ₄ "	24 ¹ / ₁₆ "	28 ¹⁵ / ₁₆ "
L	28 ⁹ / ₁₆ "	29 ³ / ₁₆ "	30 ⁹ / ₁₆ "	32 ³ / ₄ "
M	9"	9"	9"	12"
N	3 ⁹ / ₁₆ "	3 ⁹ / ₁₆ "	3 ³ / ₄ "	5 ³ / ₁₆ "

II. INSTALLATION

GENERAL

- 1A. **INSTALLATION** — The unit should be installed in accordance with The American National Standard Z223.1-1980 or latest edition Booklet entitled "National Fuel Gas Code", and the requirements or codes of the local utility or other authority having jurisdiction.
- 1B. **PRE-INSTALLATION CHECK-POINTS** — Before attempting any installation, the following points should be carefully considered:
 - Structural strength of supporting members
 - (Rooftop installation)
 - Clearances and provision for servicing
 - Power supply and wiring
 - Gas supply and piping
 - Air duct connections
 - Drain facilities and connections
 - Location for minimum noise

2. **LOCATION** — These units are designed for outdoor installations. They can be mounted on a slab or rooftop. They are not to be installed within any part of a structure such as an attic, crawl space, closet, or any other place where condenser air flow is restricted or other than outdoor ambient conditions prevail. Since the application of the units is of the outdoor type, it is important to consult your local code authorities at the time the first installation is made. Many local codes prohibit the use of a combination gas-electric unit having the heat exchanger downstream of the evaporator. The design of these units meets this code requirement in that the return air passes over the heat exchanger first before coming into contact with the evaporator coil preventing condensation from taking place within the heat exchanger.

B. OUTSIDE SLAB INSTALLATION

(Typical outdoor slab installations are shown in Figure 7. and Figure 8.)

1. Select a location where external water drainage cannot collect around unit.
2. Provide a level concrete slab extending 3" beyond all four sides of the unit. The slab should be at least 4" above grade and should be isolated from the foundation wall.
3. The location of the unit should be such as to provide proper access for inspection and servicing.

C. ROOFTOP INSTALLATION

1. Before locating the unit on the roof, make sure that the strength of the roof and beams is adequate at that point to support the weight involved. (See specification sheets for weight of unit.) This is very important and user's responsibility.
2. Rigging and roofcurb details see Figures 1, 2 and 3.
3. The unit should be placed on a solid and level platform of adequate strength. The mounting structure must be constructed as to support the unit a minimum of 3" above the roof deck. An angle iron stand of proper strength may be used to provide level support for the unit. See figures 4, 5 and 6.
4. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.

FOR OUTDOOR INSTALLATION ONLY

The venting as supplied with the unit must be used without alteration or addition. Consult your local utility BEFORE installing.

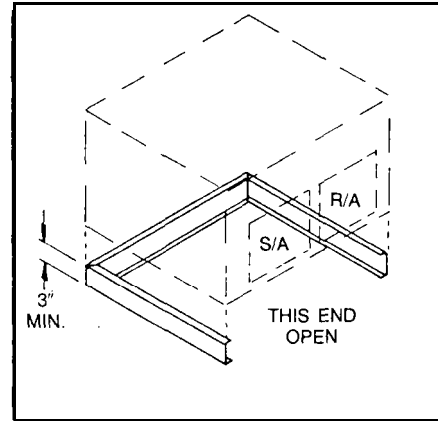


FIGURE 4. Flat Roof Installation when roof curb is not used. 3" minimum steel rails.

Typical rooftop installations are shown in Figures 3 and 4.

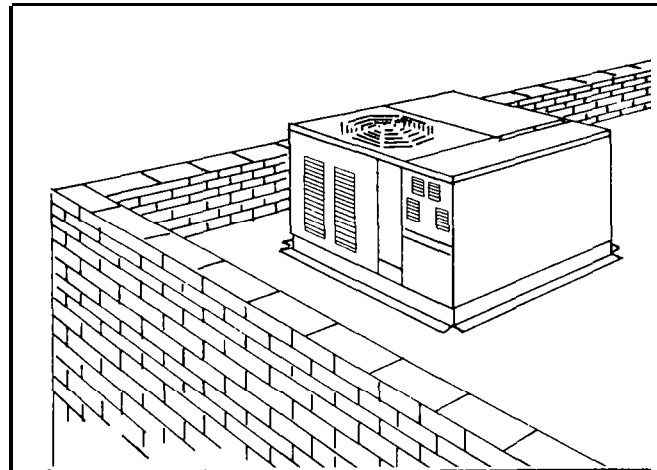


Figure 5. Flat Rooftop Installation, Attic or Drop Ceiling Distribution System. Mounted on Roofcurb.

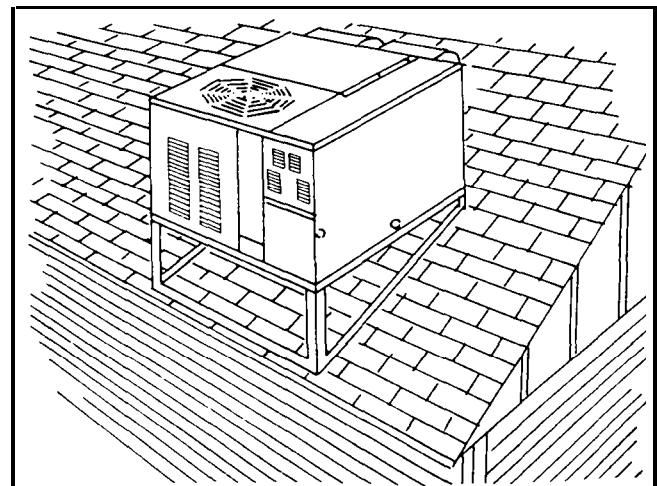


Figure 6. Pitched Rooftop Installation, Attic or Drop Ceiling Distributing System

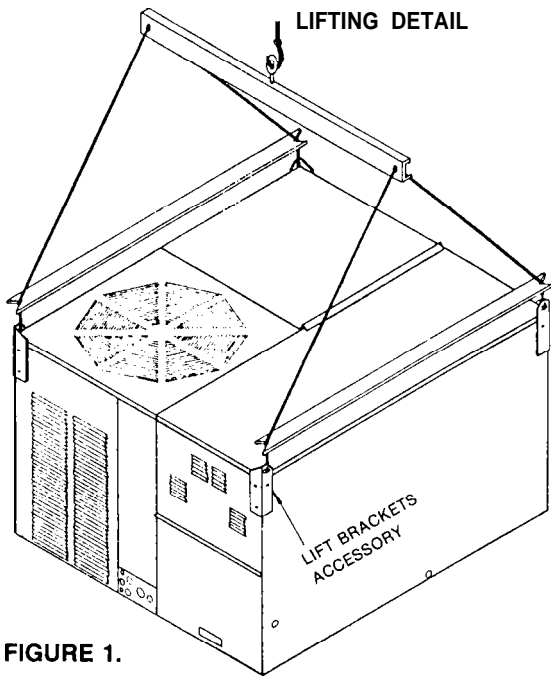


FIGURE 1.

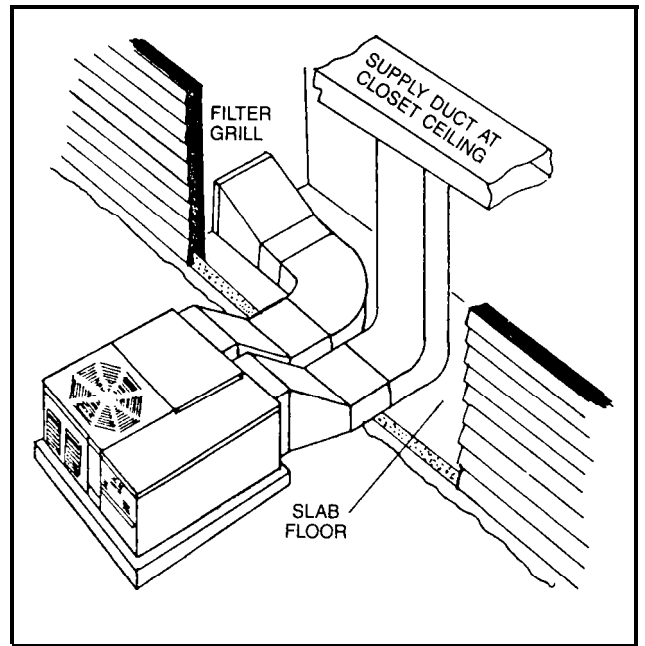


Figure 7. Outside Slab Installation, Closet Distributing System Slab Floor Construction

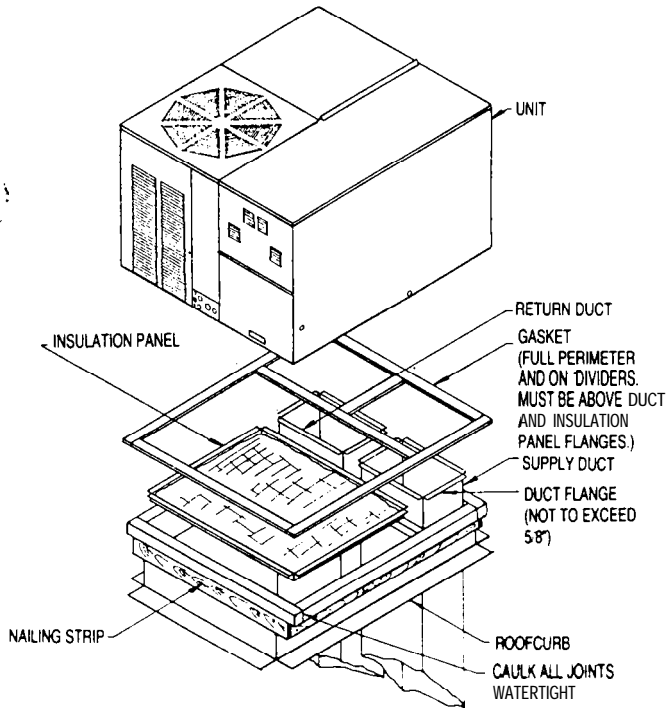


FIGURE 2.

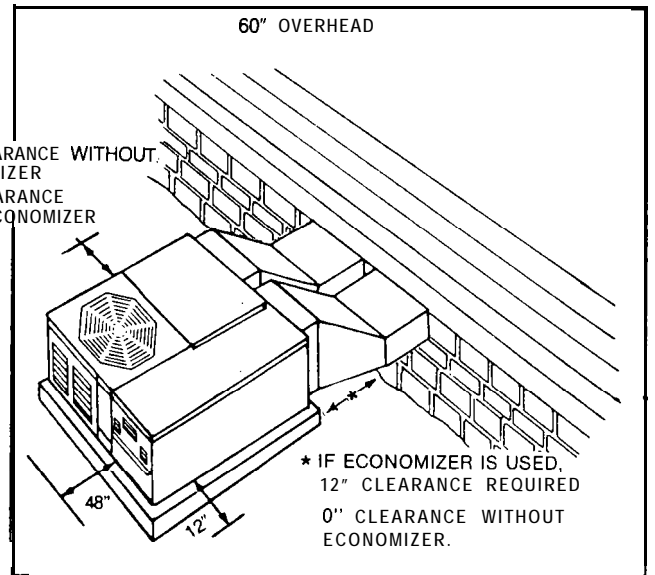


Figure 6. Outside Slab Installation. Basement or Crawl Space Distributing System.

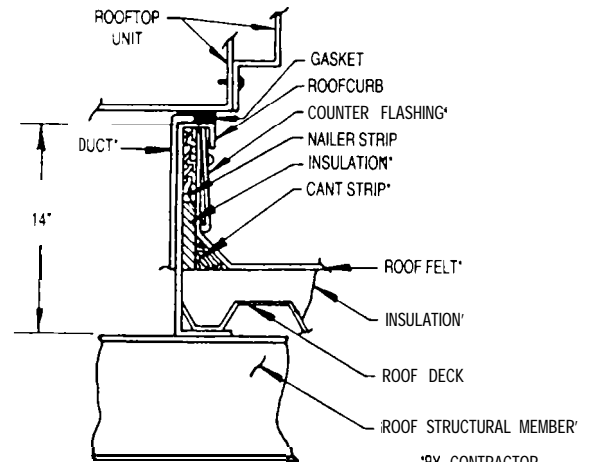
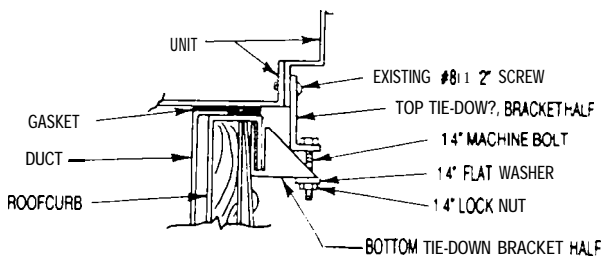


FIGURE 3.

D. DUCTING

Ductwork should be fabricated by the installing contractor in accordance with local codes. Industry manuals may be used as a guide when sizing and designing the duct system—such as NESCA (National Environmental Systems Contractors Association, 1501 Wilson Blvd., Arlington, Virginia 22209).

DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT RETURN DUCTWORK TO ANY OTHER HEAT PRODUCING DEVICE SUCH AS FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY OR PROPERTY DAMAGE.

The unit should be placed as close to the space to be air conditioned as possible allowing clearance dimensions as indicated. Ducts should be run as directly as possible to supply and return outlets. Use of non-flammable weatherproof flexible connectors on both supply and return connections at unit to reduce noise transmission is recommended.

It is preferable to install the unit on the roof of the structure if the registers or diffusers are located on the wall or in the ceiling. A slab installation could be considered when the registers are low on a wall or in the floor.

On ductwork exposed to outside air conditions of temperature and humidity, use a minimum of 2" of insulation with a good K factor, and a vapor barrier. Distribution system in attic, furred space or crawl space should be insulated with at least 2" of insulation. ½" to 1" thickness of insulation is usually sufficient for ductwork inside the air conditioned space.

Balancing dampers should be provided for each branch duct in the supply system. Ductwork should be properly supported from the structure.

E. FILTERS

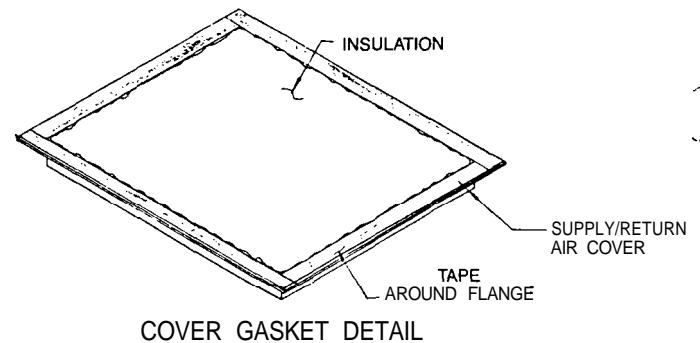
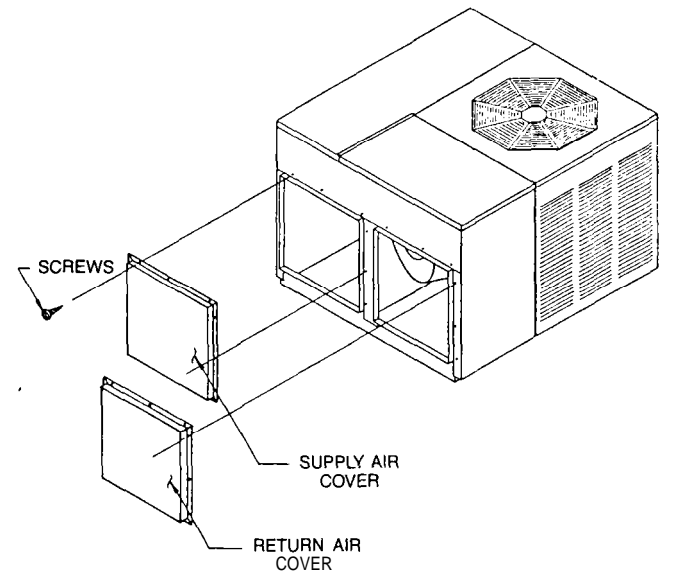
Filters are not provided with unit, and must be supplied and installed in the return air duct by the installer. A field installed filter grille is recommended for easy and convenient access to the filters, for periodic inspection and cleaning. Filters must have adequate face area for the rated air quantity of the unit. See air delivery tables for recommended filter size.

F. CLEARANCES

The following minimum clearances must be observed for proper unit performance and serviceability.

1. Provide 48" minimum clearance at front of the unit. Provide 12" minimum clearance on right and left ends of unit. If economizer is used, a 24" minimum clearance is required on left end of unit. See Figure 8.
2. Provide 60" minimum clearance between top of unit and maximum 3 foot overhang.
3. Unit is design certified for application on combustible flooring with 3" minimum clearance. See Figure 4.
4. See Figure 8 for illustration of minimum installation-service clearances.

COVER INSTALLATION BOTTOM FLOW MODELS



CONVERSION PROCEDURE

1. REMOVE SCREWS AND COVERS FROM BOTTOM OF SUPPLY & RETURN SECTIONS.
2. USING COVERS AS A TEMPLATE DRILL ¼" DIA. HOLES IN UNIT FRONT AROUND DUCT OPENINGS.
3. INSTALL GASKET SUPPLIED WITH PARTS BAG AROUND PERIMETER OF COVERS AS ILLUSTRATED IN "COVER GASKET DETAIL."
4. INSTALL COVERS USING SCREWS SUPPLIED IN PARTS BAG.

III. PIPING

A. GAS CONNECTION

1. The gas line connection to the unit must be made through the gas pipe opening provided into the 1/2" inlet valve opening. See Figure 10 for typical piping.
2. The gas line to the furnace should be of adequate size to prevent undue pressure drop and should never be less than 1/2". A trap should be installed in the gas supply line as close to the unit as possible. An outside ground joint union should be installed to connect the gas supply to the control assembly at the burner tray.
3. Gas controls have been factory installed. Another valve should be installed where local codes specify a shut-off valve is to be located outside the unit casing. (See Figure 10.)
4. Piping should be tight. **A pipe compound resistant to the action of liquified petroleum gases must be used at all threaded pipe connections.**

CAUTION:

The furnace and its individual shutoff valve must be disconnected from the gas supply piping during any pressure testing of that system at test pressures in excess of 112 pound per square inch gauge or the system must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of this gas supply system at pressures equal to or less than 1/2 PSIG.

To check for leaks in piping use a soap and water solution or other approved method. **DO NOT USE AN OPEN FLAME.**

5. A 1/8" N.P.T. plugged tapping, accessible for test gauge connection, must be installed immediately upstream of the gas supply connection to the furnace.

**TABLE 1
GAS PIPE CAPACITY TABLE (CU. FT./HR.)**

Capacity of gas pipe of different diameters and lengths in cu. ft. per hr. with pressure drop of 0.3 in. and specific gravity of 0.60 (natural gas).

Nominal Iron Pipe Size, Inches	Length of Pipe, Feet							
	10	20	30	40	50	60	70	80
1/2	132	92	73	63	56	50	46	43
3/4	278	190	152	130	115	105	96	90
1	520	350	285	245	215	195	180	170
1 1/4	1,050	730	590	500	440	400	370	350
1 1/2	1,600	1,100	890	760	670	610	560	530

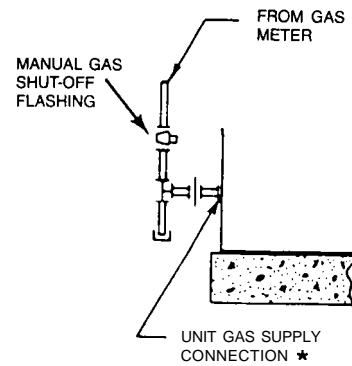
After the length of pipe has been determined, select the pipe size which will provide the minimum cubic feet per hour required for the gas input rating of the furnace. By formula:

$$\text{Cu. Ft. Per Hr. Required} = \frac{\text{Gas Input of Furnace (BTU/HR)}}{\text{Heating Value of Gas (BTU/FT}^3\text{)}}$$

The gas input of the furnace is marked on the furnace rating plate. The heating value of the gas (BTU/FT³) may be determined by consulting the local natural gas utility or the L.P. gas supplier.

B. CHECKING INPUT TO UNIT

1. Gas input must never exceed the figure shown on the rating plate.
2. Manifold pressure can be measured with a manometer attached to the 1/8" pipe tap provided in the gas valve. Manifold pressure for Natural Gas should be 3 1/2" W.C. and for LP. gas 10" W.C. To measure the input using a gas meter proceed as follows:



ROOF OR GROUND LEVEL INSTALLATION

* Factory supplied grommet must be utilized and connection caulked air-tight to insure proper operation of furnace.

Suggested Gas Piping

FIGURE 10

- a. Turn off gas supply to all appliances except furnace. With furnace burning, time the two cubic foot hand on the gas meter dial plate for one revolution in seconds: and divide this reading by two. This will give seconds per cubic foot of gas being delivered to the furnace.
- b. Assuming natural gas with heating valve of 1,000 Btu/Cu. Ft. and Sec/Cu. Ft. being determined from step 2a, then

$$\frac{1000 \times 3600}{\text{Sec.} / \text{Cu. Ft.}} = \text{Input Btu/Hr}$$

3. To adjust the regulator, remove the cap on the top of the gas valve. To decrease the pressure (decrease input to furnace), turn the screw below the cap counterclockwise. To increase the pressure (increase input to furnace), turn the screw clockwise. The manifold pressure should not vary more than plus or minus 0.3" W.C. (minimum 3.2" W.C.; maximum 3.6" W.C. for Natural Gas). If rated input cannot be obtained in adjustment to the gas regulator, change in burner orifices may be required. Check calculations carefully.

Note: For elevations up to 2,000 feet, full input ratings apply. For elevations over 2,000 feet, reduce input 4% for each 1,000 feet above sea level by changing the burner orifices.

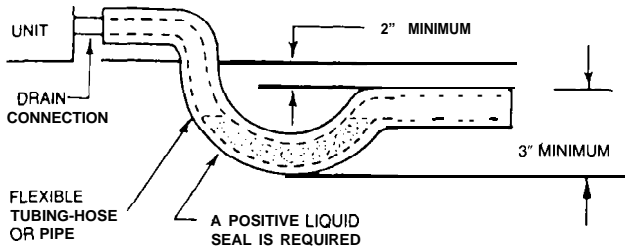
C. BURNERS

Burners for these units have been designed so that field adjustment is not required. Burners are tray-mounted and accessible for easy cleaning when required.

The conversion of manufacturer's rooftop units for use on L.P. gas must be made by a qualified service professional. The conversion kits listed in Conversion Kit Index 92-21419-02 must only be used to convert the factory installed control systems for which they have been designed. If you do not find your exact unit model number in the kit selection chart, contact your distributor or manufacturer for help in verifying the correct kit selection for your equipment. Do not substitute kits or kit components in order to avoid risk of dangerous conditions that may result in personal injury or property damage.

D. CONDENSATE DRAIN

The condensate drain connection of the evaporator is 3/4" N.P.T. A trap must be provided to have proper condensate drainage.



Install condensate drain trap as shown. Use drain connection size or larger. Do not operate without trap. Unit must be level or slightly inclined toward drain.

E. COMBUSTION AIR FAN

Inspect fan motor and blade prior to each heating season to see that both are clear of obstructions and turn freely.

NOTE: Some motors are dual voltage and require wiring change for 208V operation. See wiring diagram.

F. FURNACE ACCESS PANEL

Design of this system requires that the combustion compartment be sealed for proper furnace operation. Never operate furnace with access panel removed or screws loose. The glass inspection port allows observation of pilot and burner operation with panel in place. On slab mounted models, a mirror may be required for easier observation.

IV. WIRING

A. All wiring should be made in accordance with the National Electrical Code. The local power company should be consulted to determine the availability of sufficient power to operate the unit. The voltage at power supply should be checked to make sure it corresponds to the unit's RATED VOLTAGE REQUIREMENT. Install a branch circuit fused disconnect near the rooftop, in accordance with the N.E.C. or local codes. Wire sizes should be determined from the unit nameplate ampacity and in accordance with Table 2 or the National Electrical Code. Under no circumstances should wiring be sized smaller than is recommended by either of these two sources.

All exterior wiring must be within approved weatherproof conduit. The unit must be permanently grounded in accordance with local codes, or in the absence of local codes, with the N.E.C. ANS/NFPA NO. 70-1981 or latest edition by using ground lug in control box.

NOTE:

Some single phase units are equipped with a single pole contactor. Caution must be exercised when servicing as only one leg of the power supply is broken with the contactor.

To wire units, make the following high and low voltage connections.

1. High Voltage Wiring:

Single Phase

Two leads should be connected to terminals L1 and L3 in the electrical control section, using wire sizes specified in wiring table.

Three Phase

Three leads should be connected to terminals L1, L2 and L3 in the electrical control section, using wire sizes specified in wiring table.

2. Low Voltage Wiring:

Connect 24 V. wires from the thermostat to the corresponding wires in control box using No. 18 AWG as follows:

LEAD	THERMOSTAT
Black w/White Tracer	W (Heat)
Black w/Green Tracer	G (Fan)
Yellow	Y (Cool)
Red	R (Common)

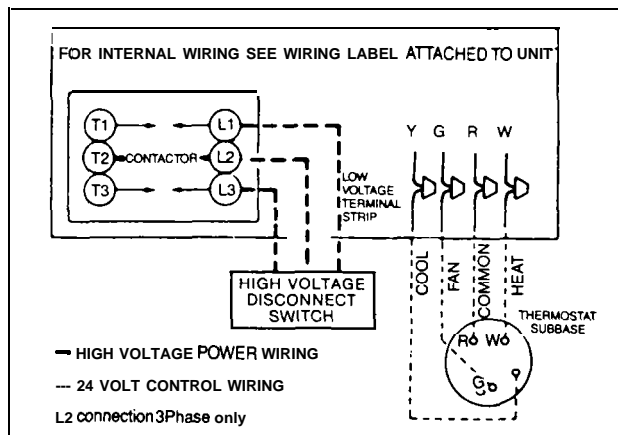
3. Internal Wiring

A diagram of the internal wiring of this unit is located under the electrical box cover. If any of the original wire as supplied with the appliance must be replaced, the wire gauge and insulation must be same as original wiring.

4. Transformer and combustion air motor are factory wired for 230 volts on 208/230 volt models. See wiring diagram for 208 volt wiring.

TABLE 2
BRANCH CIRCUIT
COPPER WIRE SIZE
(Based on 1% Voltage Drop)

SUPPLY WIRE LENGTH - FEET	BRANCH CIRCUIT AMPACITY							
	15	20	25	30	35	40	45	50
200	6	4	4	4	3	3	2	2
150	8	6	6	4	4	4	3	3
100	10	8	8	6	6	6	4	4
50	14	12	10	10	8	8	6	6



NOTE:

- For branch circuit wiring (main power supply to unit disconnect), the minimum wire size for the length of run can be determined from Table 2 using the circuit ampacity found on the unit rating plate. From the unit disconnect to unit, the smallest wire size allowable in Table 2 may be used, as the disconnect must be in sight of the unit.
- Wire size based on 60°C rated wire insulation and 30°C Ambient Temp. (86°F).
- For more than 3 conductors in a raceway or cable, see the N.E.C. for derating the ampacity of each conductor.

V. ELECTRONIC IGNITION SYSTEM

MODE OF OPERATION

The unit is automatically controlled by the room thermostat. The vent motor, pilot and main burners are cycled on each call for heat. The vent motor, pilot and main burners are shutdown when the thermostat is satisfied. When the thermostat calls for heat the vent motor is energized. The vent motor interlock will close, supplying power to the electronic ignition circuit. This will open the pilot valve and the ignition spark will ignite the pilot. The probe proves the presence of the pilot flame and energizes the main valve allowing the main burners to ignite. When the thermostat is satisfied, the vent motor is de-energized the vent motor interlock will open, de-energizing the pilot and main valve. If the pilot flame is extinguished during main burner operation, the sensing probe detects the absence of flame and causes the main valve to close and re-energize the ignition spark to relight the pilot. The fan limit control, sensing the furnace temperature will energize the main blower on start up when the temperature reaches fan "on" setting and will de-energize it on shut down when the temperature drops to the fan "off" setting.

OPERATING INSTRUCTIONS

Instructions to start and shut off the furnace are in the "lighting instructions" shown below and on the unit.

CAUTION: The spark ignition and ignition lead from the ignition control transformer are high voltage. Keep hands or tools away to prevent hazard from electrical shock. Shut off electrical power before servicing any of the controls.

The initial start up on a new installation may require the control system to be energized for some time until any air has bled through the pilot burner and fuel gas is available at the pilot.

CHECKOUTPROCEDURE

Before leaving the installation, a complete operating cycle should be observed. Carefully follow the lighting instructions below. Run the unit through a normal operating cycle and observe the operation.

SERVICE

Service should only be conducted by qualified service personnel.

1. If the pilot burner does not ignite, check to see that all connections are proper. **CAUTION** — Be sure electrical power is off when checking connections.
2. Observe presence of spark. If spark is not present, determine if power is available to the control. The ignition control should be replaced if, with power applied and spark gap properly set to $118 \pm 1/32$, sparking does not occur. **CAUTION** — High voltage, do not touch spark leads, gap or connections with controls energized. If pilot does not light even though a spark is present, gas is not available at the pilot burner or the gas pressure is excessively low or high.
3. If pilot gas ignites, but burner does not, check lead connections to the flame sensing probe and control.
4. The unit must be properly grounded. The flame sensor should prove with about $1/2$ " of pilot flame on the sensor probe.

NOTE: There is no way to field service defective control. Do not attempt to remove the covers and make field repairs. Replace the entire control with new controls of the same model and type. Return failed controls to the factory through an authorized distributor or regional parts center.

LIGHTING INSTRUCTIONS

This appliance is equipped with an intermittent type ignition device. Do not attempt to manually light pilot.

1. Set wall thermostat to "off" position.
2. Turn on power to unit.
3. Turn gas valve knob to "on" position. (After initial start-up, main gas valve should be left on.) Install panel.
4. Never operate furnace with panel removed!
5. Set wall thermostat to call for heat. Vent motor is energized, vent motor interlock is made, and ignition and pilot valve will be energized. Pilot will light, ignition spark will stop. Main gas valve will open.
6. Set thermostat at desired setting. Vent motor, ignition spark, pilot and main flame will cycle on each call for heat.

TO SHUT OFF FURNACE — Turn wall thermostat selector switch to "Off" or "Cool."

SEQUENCE OF OPERATION

NORMAL OPERATING SEQUENCE

1. Thermostat calls for heat.
2. Vent motor is energized, vent motor interlock is made.
3. Ignition spark is energized.
4. Pilot valve opens and pilot burner lights.
5. Sensor proves pilot flame.
6. Ignition spark de-energized.
7. The main gas valve is energized.
8. Pilot flame lights the main burners.
9. Thermostat is satisfied and opens.
The main and pilot valves are de-energized, shutting down main and pilot flames.

VI. MAINTENANCE

The furnace should operate for many years without excessive scale buildup in the flue passageways. However it is recommended that the home owner inspect the flue passageways, the vent system and the main and pilot burners for continued safe operation paying particular attention to deterioration from corrosion or other sources. The flue passageways and vent system should be inspected and cleaned (if required) by a qualified serviceman after the second year of service and annually thereafter using this procedure. Combustion air motor and fan should be checked for obstructions prior to each heating season.

1. Turn off all power to the furnace and set the thermostat lever to the lowest temperature.
2. Shut off the gas supply to the furnace either at the meter or at a manual valve in the supply piping.
3. Remove the control door from the furnace.
4. Turn the gas control knob to the "Off" position.
5. Mark the individual wires to the gas control for identifying purposes when they are to be reconnected.
6. Remove wires from the gas controls if the system contains electric ignition: disconnect the ignition wire to the ignitor from its supply end at the control box mounted on the furnace.
7. Loosen the (2) screws securing the burner cover and lift the burner cover off.
8. Using wrenches, separate the ground-joint unit in the supply piping at the furnace.

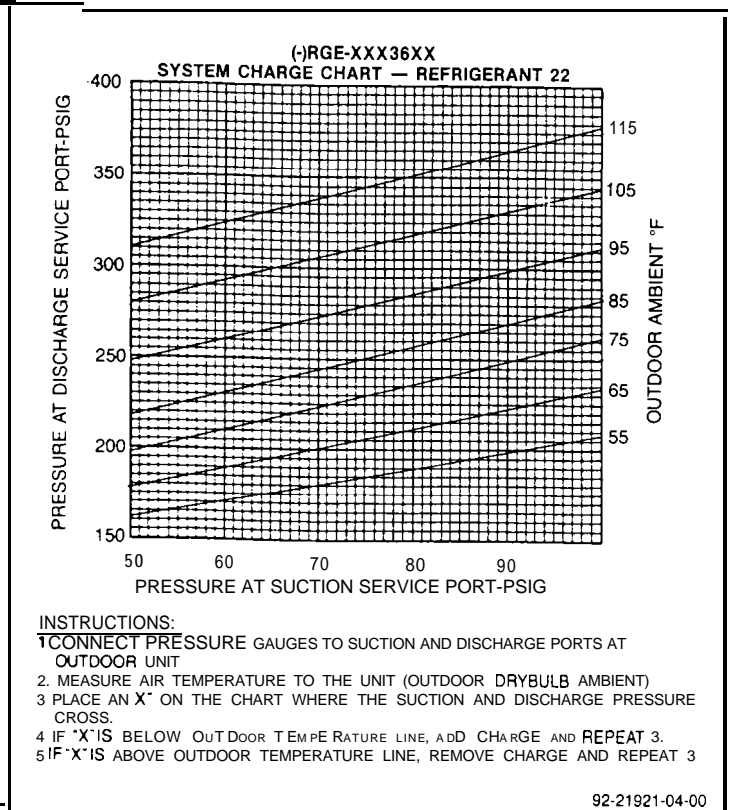
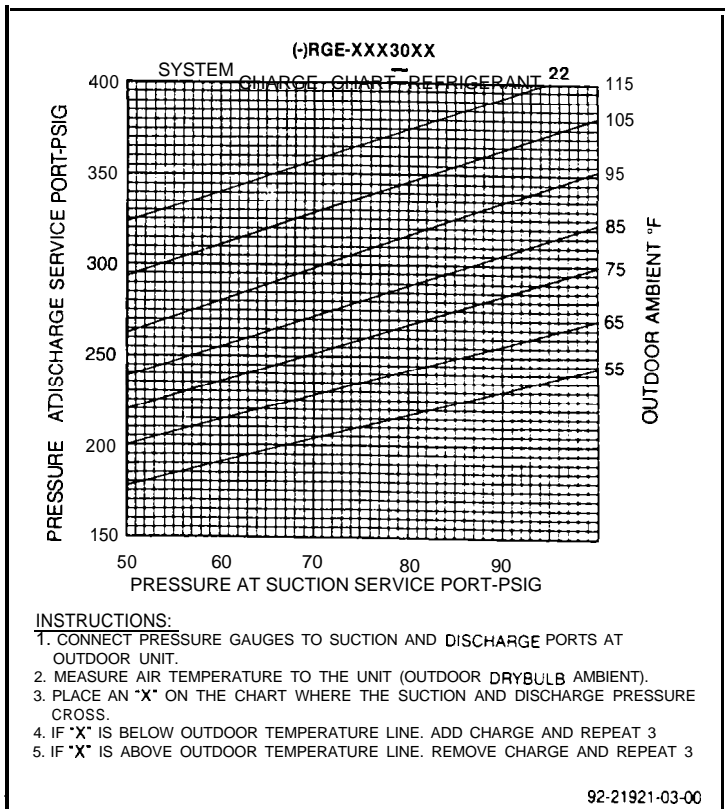
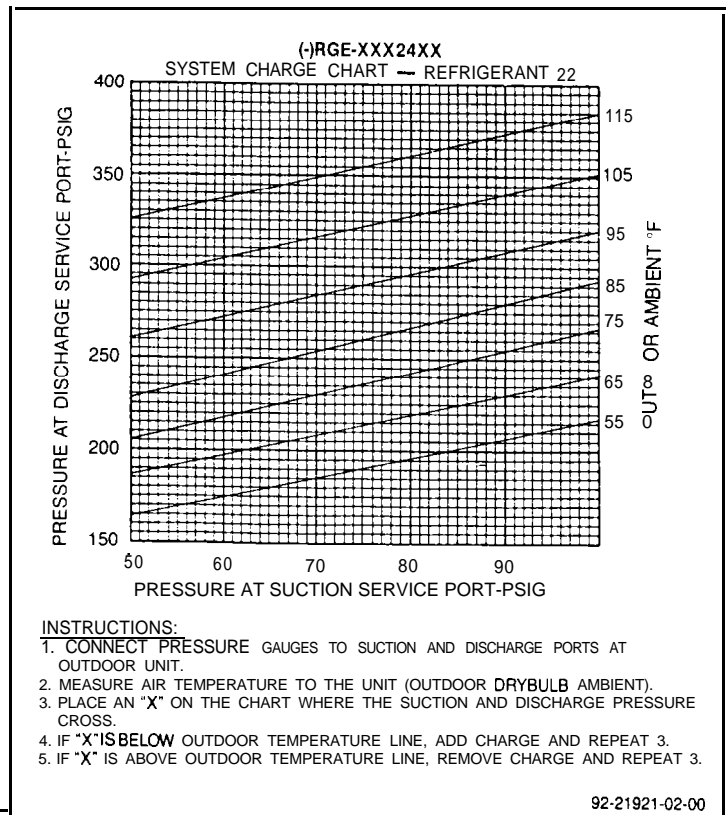
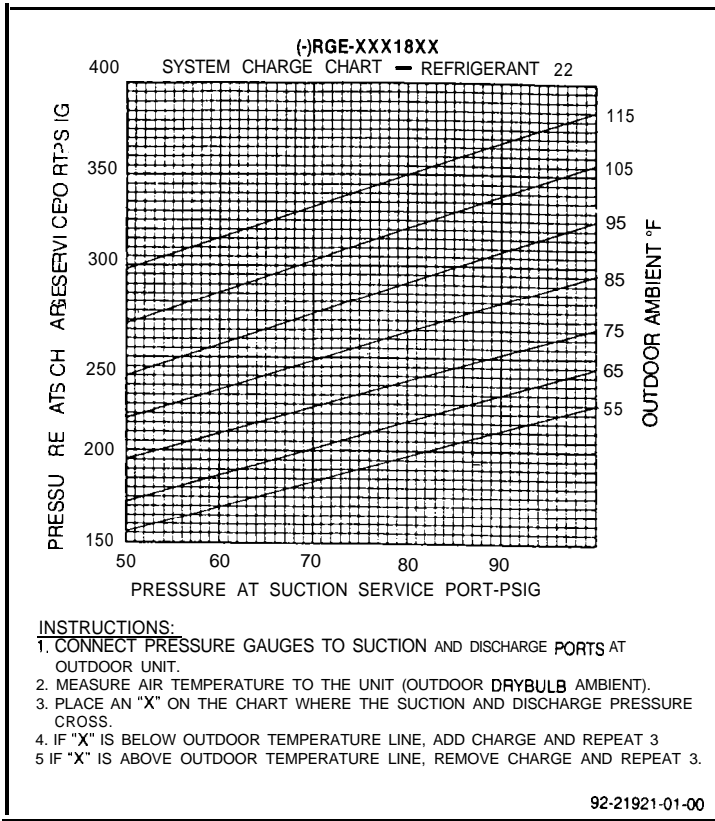
9. Remove piping between the control valve and the ground-joint union.
10. Remove the burner assembly from the furnace.
11. Each furnace section has a flue baffle secured in each cell section outlet collar. Remove the (2) screws in each collar, and slide out the flue baffle, after removal of angle baffles in flue chamber.
12. The furnace sections can now be cleaned by the use of a wire brush with a flexible handle. Slide the brush through each section. Sweeping back and forth through each section will loosen any scale allowing it to fall to the bottom of the sections. The debris can now be brushed out of the bottom sections or cleaned with the nozzle of a vacuum cleaner.
13. Check the ports on the gas burners to make certain that they are clean. Brushing or jarring may loosen any accumulation. Standing the burner assembly on end will allow any scale to fall out of the entrance end of the burners.
14. Reinstall the flue baffles into each section and angle baffles in flue chamber.
15. Replace the burner assembly and secure in position.
16. Reinstall the gas supply piping between the gas control and the ground joint union.
17. Reconnect all wiring that was previously disconnected.
18. Turn on the gas supply.
19. Turn on the electric power.
20. Follow the lighting procedure listed on the lighting instruction label on the furnace. Due to the removal of the controls and piping during the cleaning operation, the system will contain air and therefore may have to be cycled a couple of times before the pilot gas will ignite.
21. Reset the thermostat lever to the desired temperature.

TROUBLE SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
High head-low suction	a. Restriction in liquid line or capillary tube or filter drier	a. Remove or replace defective component
High head-high or normal suction	a. Dirty condenser coil b. Overcharged c. Condenser fan not running	a. Clean coil b. Correct system charge c. Repair or replace
Low head-high suction	a. Incorrect capillary tube b. Defective compressor valves	a. Replace evaporator assembly b. Replace compressor
Unit will not run	a. Power off or loose electrical connection b. Thermostat out of calibration-set too high c. Defective contactor d. Blown fuses e. Transformer defective f. High pressure control open g. Compressor overload contacts open	a. Check for unit voltage at contactor in condensing unit b. Reset c. Check for 24 volts at contactor coil - replace if contacts are open d. Replace fuses e. Check wiring-replace transformer f. Reset-also see high head pressure remedy. The high pressure control opens at 430 PSI g. If external overload - replace OL. If internal replace compressor. NOTE: Wait at least 2 hours for overload to reset
Condenser fan runs, compressor doesn't	a. Run or start capacitor defective b. Start relay defective c. Loose connection d. Compressor stuck, grounded or open motor winding , open internal overload. e. Low voltage condition	a. Replace b. Replace c. Check for unit voltage at compressor check & tighten all connections d. Wait at least 2 hours for overload to reset. If still open, replace the compressor. e. Add start kit components
Low suction - cool compressor Iced Evaporator Coil	a. Low indoor airflow	a. Increase speed of blower or reduce restriction-replace air filter
Compressor short cycles	a. Defective overload protector	a. Replace - check for correct voltage
Registers sweat	a. Low airflow	a. Increase speed of furnace blower or reduce restriction replace air filter
High suction pressure	a. Excessive load b. Defective compressor	a. Recheck load calculation b. Replace
Insufficient cooling	a. Improperly sized unit b. Improper airflow c. Incorrect refrigerant charge d. Incorrect voltage	a. Recalculate load b. Check - should be approximately 400 CFM per ton. c. Charge per procedure attached to unit service panel d. At compressor terminals, voltage must be within 10% of nameplate volts when unit is operating

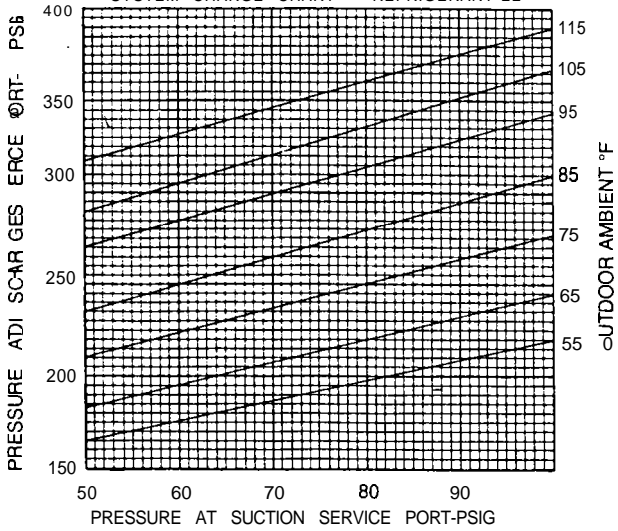
***WARNING — DISCONNECT ALL POWER TO UNIT BEFORE SERVICING.**

VII. CHARGING DATA



(-)RGE-12X36XX

SYSTEM CHARGE CHART — REFRIGERANT 22



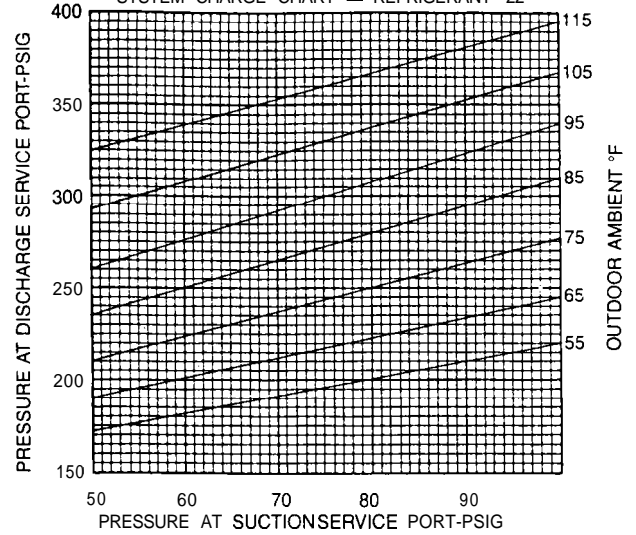
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS AT OUTDOOR UNIT.
2. MEASURE AIR TEMPERATURE TO THE UNIT (OUTDOOR DRYBULB AMBIENT).
3. PLACE AN "X" ON THE CHART WHERE THE SUCTION AND DISCHARGE PRESSURE CROSS.
4. IF "X" IS BELOW OUTDOOR TEMPERATURE LINE, ADD CHARGE AND REPEAT 3.
5. IF "X" IS ABOVE OUTDOOR TEMPERATURE LINE, REMOVE CHARGE AND REPEAT 3.

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(-)RGE-XXX42XX

SYSTEM CHARGE CHART — REFRIGERANT 22



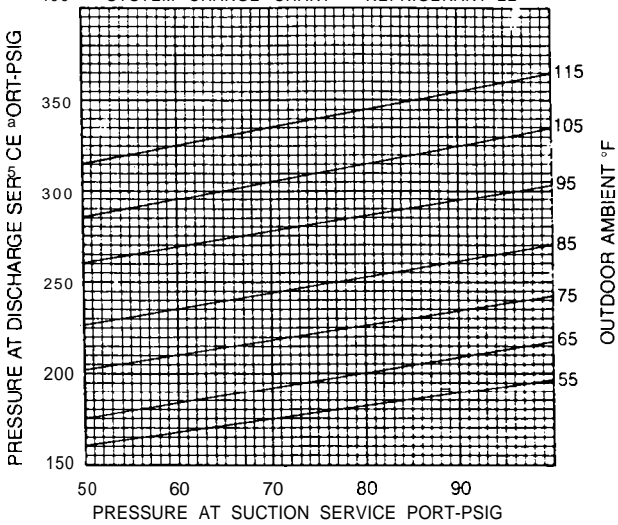
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS AT OUTDOOR UNIT.
2. MEASURE AIR TEMPERATURE TO THE UNIT (OUTDOOR DRYBULB AMBIENT).
3. PLACE AN "X" ON THE CHART WHERE THE SUCTION AND DISCHARGE PRESSURE CROSS.
4. IF "X" IS BELOW OUTDOOR TEMPERATURE LINE, ADD CHARGE AND REPEAT 3.
5. IF "X" IS ABOVE OUTDOOR TEMPERATURE LINE, REMOVE CHARGE AND REPEAT 3.

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(-)RGE-XXX48XX

SYSTEM CHARGE CHART — REFRIGERANT 22



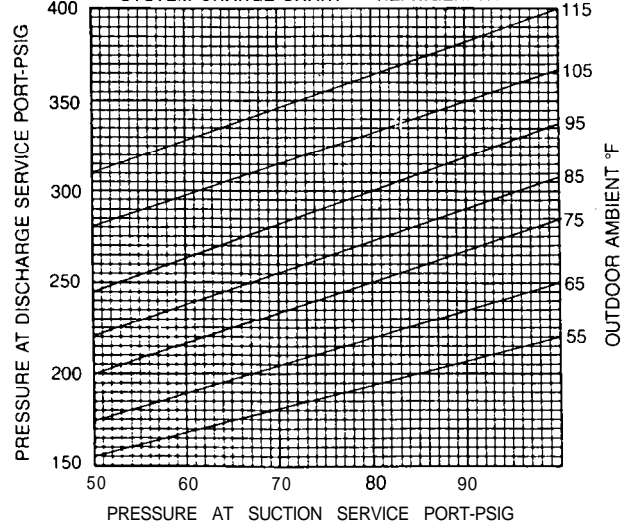
INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS AT OUTDOOR UNIT.
2. MEASURE AIR TEMPERATURE TO THE UNIT (OUTDOOR DRYBULB AMBIENT).
3. PLACE AN "X" ON THE CHART WHERE THE SUCTION AND DISCHARGE PRESSURE CROSS.
4. IF "X" IS BELOW OUTDOOR TEMPERATURE LINE, ADD CHARGE AND REPEAT 3.
5. IF "X" IS ABOVE OUTDOOR TEMPERATURE LINE, REMOVE CHARGE AND REPEAT 3.

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(-)RGE-XXX60XX

SYSTEM CHARGE CHART — REFRIGERANT 22



INSTRUCTIONS:

1. CONNECT PRESSURE GAUGES TO SUCTION AND DISCHARGE PORTS AT OUTDOOR UNIT.
2. MEASURE AIR TEMPERATURE TO THE UNIT (OUTDOOR DRYBULB AMBIENT).
3. PLACE AN "X" ON THE CHART WHERE THE SUCTION AND DISCHARGE PRESSURE CROSS.
4. IF "X" IS BELOW OUTDOOR TEMPERATURE LINE, ADD CHARGE AND REPEAT 3.
5. IF "X" IS ABOVE OUTDOOR TEMPERATURE LINE, REMOVE CHARGE AND REPEAT 3.

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