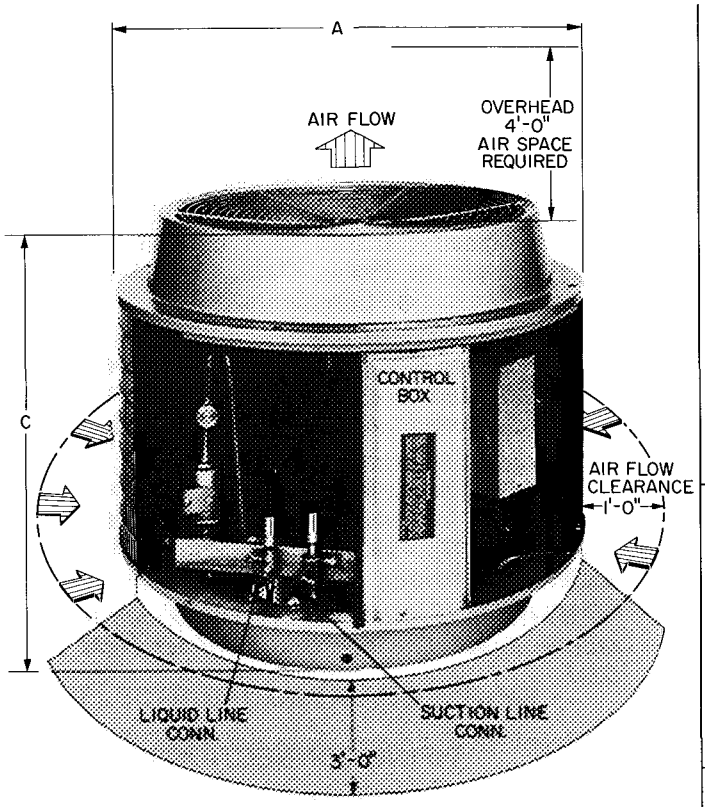
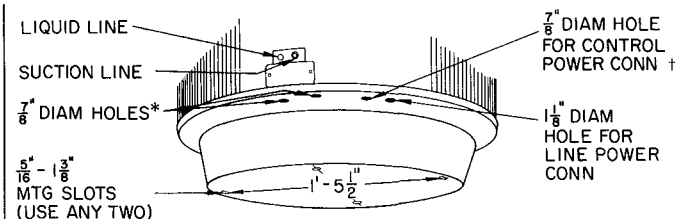
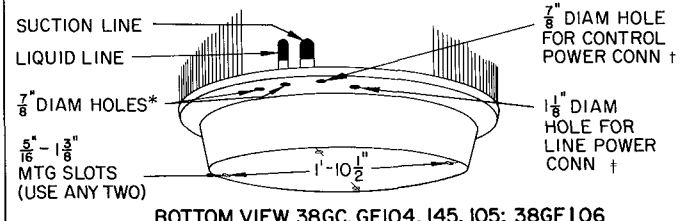
Air-Cooled Condensing Units



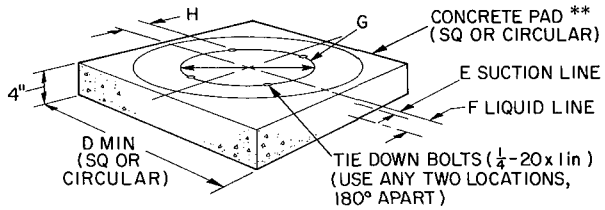


BOTTOM VIEW 38GC101; 38GC, GF102, 103



BOTTOM VIEW 38GC, GF104, 145, 105; 38GF106

CONCRETE MOUNTING PAD



SPACE REQUIRED FOR SERVICE
CONDENSER AIR FLOW

*Two plugged holes to accommodate charging lines Replace plugs when finished
†Insert rubber grommet (shipped in low voltage splice box) in hole to protect wires if conduit is not used
‡1-3/8 in diam on 38GF106 single-phase units
**Concrete pad should weigh 1-1/2 to 2 times weight of unit

Fig. 1 — Dimensions, Connections and Mounting Pad (Unit Access Panel Removed)

Table 1 — Installation Data

CONDENSING UNIT		38GC	38GC,GF					38GF
		101	102	103	104	145	105	106*
OPERATING WT (lb)	38GC	111	132	149	165	207	220	–
	38GF	–	136	154	169	211	224	250
DIMENSIONS (ft–in.)	Diam A	2–0 3/4	2–0 3/4	2–0 3/4	2–5 3/4	2–5 3/4	2–5 3/4	2–5 3/4
	Height C	2–1 1/16	2–3 1/16	2–3 1/16	2–1 1/16	2–5 1/16	2–5 1/16	2–7 1/16
REFRIGERANT CONN. (in.)	Suct ODF	5/8	5/8	5/8	3/4	3/4	3/4	1 1/8
	Liq ODF	3/8	3/8	3/8	3/8	3/8	3/8	3/8

38GF units only, field-supplied tubing sizes for oil return and refrigerant charge

*38GF006 supplied with 3/4 to 1-1/8 in suction valve connection adapter (field-installed)

Table 2 — Pad Dimensions (ft–in.)

DIM.	38GC	38GC,GF		38GF
	101	102, 103	104, 145, 105	106
D	2–3		2–10	
E	0–2 1/2		0– 4 3/8	
F	0–3 7/8		0– 7 1/8	
G	1–5 1/2		1–10 1/2	
H	0–1 5/8		0– 2	

Table 3 – Accessories

PART NUMBER	DESCRIPTION
	Auxiliary Start Capacitor and Relay Package* (single-phase units)
38GC900001	38GC101
38GF900132	38GC102, 103; 38GF102 (six 38GF900121)
	Low Voltage (24 v) Control Transformer (standard on 38GF units)
38GC9000132	38GC101, 102, 145, 105 (six 38GC9000121; 20 va)
38GC9000371	38GC103, 104 (six 38GC9000361; 40 va).
32LM001301	Solid State Head Pressure Control. Special field-installed fan motor required on 102 thru 145 units.

Fan Motor Carrier Part No.

UNIT	38GF102	38GF103†	38GF104†	38GF145
MOTOR NO.	38GF 500011	38GF 500011†	HC38 VE230†	HC40 VL700

HH01AD038	Low Voltage Control (heat–cool) – Honeywell Thermostat
HH01AZ039	Cooling Switch Base
58BV900081	Low Voltage Control (heat–cool) – Grayson Thermostat (six HH01YA092)
58BV900101	Cooling Switch Base (six HH93YZ094)
38GB900021	Expansion Valve Package (six EA16DC100 – 38GF102, 103, 104)
38GF900072	Expansion Valve Package (six EA12XC400 – 38GF145, 105, 106)
38GC900152	Indoor Fan Relay (six 38BA400693)

Precharged Tubing (not available for 38GF106 Units)

	LIQUID			SUCTION			UNIT
	Lgth (ft)	OD (in.)	Tube End OD (in.)	OD (in.)	Tube End OD (in.) Evap	Tube End OD (in.) Cond	
38GC900031	10	3/8	3/8	5/8	3/4‡	5/8	38GC101,102, 103, 38GF102
38GC900041	18	3/8	3/8	5/8	3/4‡	5/8	
38GC900051	25	5/16	3/8	5/8	3/4‡	5/8	
38GC900061	35	5/16	3/8	5/8	3/4‡	5/8	
38GC900191	50	1/4	3/8	5/8	3/4‡	5/8	38GC101,102, 38GF102
38GC900181	50	5/16	3/8	5/8	3/4‡	5/8	38GC103
38GC900071	10	3/8	3/8	3/4	3/4	3/4	38GC104,145, 105, 38GF103, 104,145,105
38GC900081	18	3/8	3/8	3/4	3/4	3/4	
38GC900091	25	3/8	3/8	3/4	3/4	3/4	
38GC900101	35	3/8	3/8	3/4	3/4	3/4	
38GC900111	50	3/8	3/8	3/4	3/4	3/4	

*Standard equipment on all *current* single-phase units except 38GC101, 102, 103 and 38GF102

†Motor used with units equipped with 06R compressor For all other units, use fan motor HC38VQ700.

‡For 5/8-in evap connection, cut off 3/4-in. end

NOTE All suction lines have a 90-degree bend at one end

TRANSPORTATION DAMAGE

File claim with shipping company if shipment is damaged or incomplete.

SKID REMOVAL

Move condensing unit to final location. Remove top grille. Reach between fan blades and remove 1/4-in. hex head screws holding unit to skid. On the 145, 105, 106 units, remove the two compressor shipping brackets attached to top of compressor and sides of unit.

PRELIMINARY SURVEY

Consult local building codes for special installation requirements.

When installing unit, allow sufficient space for air-flow clearance, wiring, refrigerant piping and servicing unit. NEC minimum requirement is 3 ft (see Fig. 1). Position unit so water from roof or eaves will not pour directly on top of unit.

Install unit on a solid, level mounting pad. Position tie-down bolts in pad. Any two holes in unit base may be used to fasten unit to pad.

38GC,GF Condensing Units are designed for application with any Carrier or other evaporator of proper capacity. Install each unit in accordance with Refrigerant Piping Data, (Table 4) and the following special requirements.

Where refrigerant line lengths exceed 25 ft, it is recommended that a liquid line filter-drier, crankcase heater and accessory start capacitor with relay be added to condensing unit.

Liquid line filter-drier and crankcase heater are factory installed on 38GF units. Start capacitor with relay is available as an accessory for 38GC101, 102, 103 and 38GF102; factory installed on remaining sizes.

When evaporator is below condensing unit, reduce liquid line size one diameter (min 1/4-in. OD).

PIPING CONNECTIONS

38GC,GF Condensing Units can be connected to evaporator sections using Carrier accessory precharged tubing or field-supplied tubing of refrigerant grade. (Accessory tubing not available for 38GF106.) See Table 3 for accessory tubing sizes and Table 4 for recommended field-supplied tubing sizes. When over 25 ft of interconnecting tubing is used, follow special requirements described above in Preliminary Survey. Do not use damaged or contaminated tubing. Do not cut 3/8-in. OD liquid line to a length shorter than 10 ft. Bend or coil to fit. When precharged tubing or evaporator section has been open for more than 15 seconds per connection, evacuate or purge evaporator coil and tubing system (use field-supplied refrigerant, not unit refrigerant). If necessary, refer to Carrier System Design Manual, Part 3, for standard piping techniques.

38GC,GF Connection Procedure – *When making piping connections, be sure to provide clearance at unit for electrical connections.*

Connect refrigerant liquid and suction lines to condensing unit (Fig. 1). Unit Compatible Fitting permits two methods of refrigerant line connection. mechanical (quick-connect) or sweat connection.

38GF106 UNITS – Remove suction line adapter taped to compressor shipping bracket and connect to suction line Compatible Fitting. Sweat connect refrigerant suction line to adapter. Connect liquid refrigerant line to unit.

MECHANICAL CONNECTION (Mate one set of connections at a time).

1. Loosen nut on Compatible Fitting one turn. Do not remove. Loosen tube clamp.
2. Remove rubber plug and be sure O-ring is in the groove inside the Compatible Fitting.
3. Cut tubing to correct length.
4. Use gage on tag attached to service valve to mark tube end for correct insertion depth. Insert tube into Compatible Fitting until it bottoms. (Tube should be inserted at least as far as mark on tubing.)
5. Tighten nut until it *bottoms* on back coupling flange. Tighten tube clamp.

SWEAT CONNECTION (use refrigerant grade tubing).

1. Remove locking nut and rubber O-ring from inside of fitting. Loosen tube clamp entering condensing unit base.
2. Cut tubing to correct length.
3. Insert tube into Compatible Fitting. Wrap top and bottom of service valves in wet cloth to prevent damage by heat. Solder with low temperature (450 F) silver alloy solder. Tighten tube clamp.
4. Evacuate or purge system with *field-supplied* refrigerant.

ELECTRICAL DATA AND WIRING

Wiring – Field wiring must comply with local and national codes. Install a branch circuit fused disconnect of adequate size to handle starting current. When making electrical connections, provide clearance at unit for refrigerant piping connections.

LINE POWER is brought thru unit base pan flange and thru hole provided in control box (Fig. 1). On 38GC101, 38GF106 (230-v, 1-ph) and 38GF103, 104 (208- and 230-v, 3-ph) units, line power connections are made to pigtails supplied with unit. Use approved splice connector. *Do not use aluminum field wire for splice connections unless copper to aluminum adapters is used, and correct wiring techniques are followed.*

On all other models connect line power to contactor screw power terminals as indicated on unit label diagram, i.e., connect power leads to contactor terminals 21 and 23 on single-phase units, or 21, 22, and 23 on 3-phase units.

On all 3-phase units, do not connect a grounded high voltage leg to control circuit pigtail or terminal; connect leg to compressor pigtail or terminal. See label diagram.

CONTROL POWER is brought thru unit base pan (Fig. 1), and thru 7/8-in. hole into low voltage section of control box. All connections are made to pigtails supplied with unit (Fig. 2). Where supply voltage exceeds 150 volts to ground, or local codes require it, ground 24-volt control circuit at field splice C.

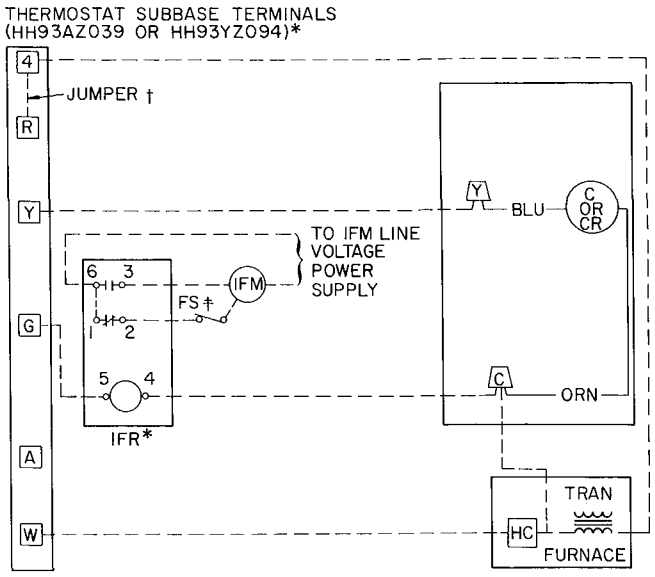
Table 4 – Refrigerant Piping Data

COND UNIT	REFRIG CONTROL	MAX COND UNIT HT (ft)		REFRIGERANT LINE LENGTH (ft)									
				25		50		75		100		150	
				Line Diameter (in. OD)									
		Above Evap	Below Evap	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq
38GC101	TXV	90	90	5/8	3/8	5/8	1/2	5/8	5/8	3/4	5/8	7/8	5/8
	Cap. Tube	70	50										
38GC102	TXV	90	90	5/8	3/8	5/8	1/2	5/8	5/8	3/4	5/8	7/8	5/8
38GF102	Cap. Tube	70	50										
38GC103	TXV	90	90	5/8*	3/8	5/8	5/8	7/8	5/8	7/8	5/8	1 1/8	5/8
38GF103	Cap. Tube	70	50										
38GC104	TXV	90	90	3/4	3/8	5/8	5/8	1 1/8	5/8	1 1/8	7/8	1 1/8	7/8
38GF104	Cap. Tube	70	50										
38GC145	TXV	90	90	3/4	3/8	7/8	5/8	1 1/8	5/8	1 1/8	7/8	1 1/8	7/8
38GF145	Cap. Tube	70	50										
38GC105	TXV	90	90	3/4	3/8	7/8	7/8	1 1/8	7/8	1 1/8	7/8	1 1/8	7/8
38GF105	Cap. Tube	70	50										
38GF106	TXV	90	90	1 1/8	3/8	1 1/8	7/8	1 1/8	7/8	1 1/8	7/8	1 1/8	7/8

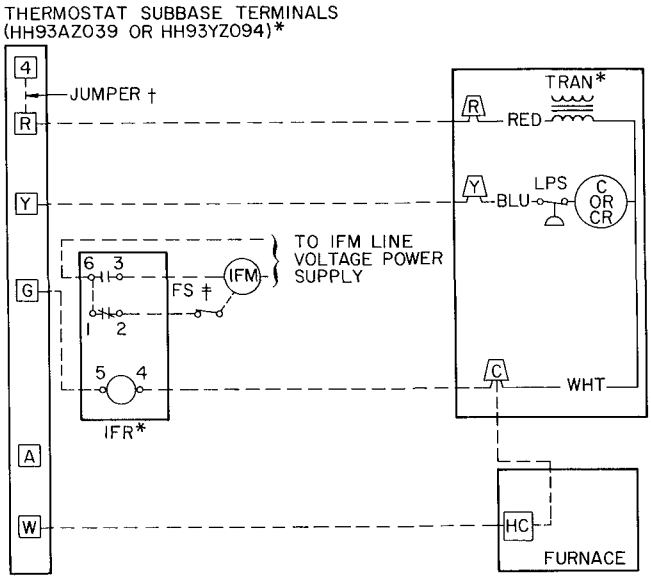
Crankcase heater (standard on GF), liquid line filter-drier (standard on GF) and start capacitor with relay (accessory on GC101, 102, 103 and GF102) required Reduce liquid line size one diameter (min 1/4-in OD) when evaporator is below condensing unit

TXV – Thermal Expansion Valve
Cap. Tube – Capillary Tube

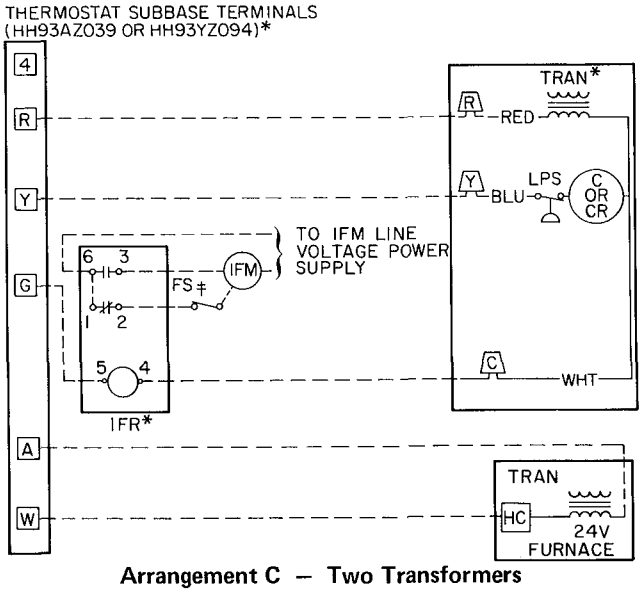
*3/4-in on 38GF.



Arrangement A — Transformer External to Condensing Unit (38GC Only)



Arrangement B — Transformer in Condensing Unit



Arrangement C — Two Transformers

Fig. 2 — Control Circuit Wiring

LEGEND

C	— Contactor	**IFM**	— Indoor Fan Motor
CR	— Control Relay	**IFR**	— Indoor Fan Relay
FS	— Fan Switch	**LPS**	— Low-Pressure Switch (see Note 2)
HC	— Heating Control	**Tran**	— Transformer

Field Splice

Field Wiring

Factory Wiring

*Accessory (transformer standard on 38GF units)

†Install jumper between 4 and R when one 24-volt transformer is used (Jumper supplied on HH93YZ094)

‡Connect to low speed indoor fan terminal when 2-speed fan is used

NOTES

1 If external transformer is used for condensing unit, it must have a minimum of 10 va (38GC101), 17 va (38GC102), 27 5 va (38GC103, 104), or 15 va (38GC145, 105)

2 Low pressurestat supplied on all 38GC units prior to Serial no 9000001 All 38GF units contain low pressurestat

Table 5 — Electrical Data

MODEL 38GC	VOLTS/ PH	COMPR LRA	COMPR FLA	FAN FLA	BRANCH CIRCUIT Wire Size† (AWG)	BRANCH CIRCUIT Max Ft Wire†	Fuse* Amps
101---	230/1	51	12 8	1.1	12 10	37 58	20
102---		57	14 8	1 1	12 10	32 50	25
102310		70	14.8	1 1	12 10	32 50	25
103---		78	19 0	1 1	10 8	40 62	30
103310		86	21 0	1 2	10 8	36 57	30
103320		104	21.0	1.2	10 8	36 57	30
104---		85	21 9	1 5	10 8	34 54	35
104310		93	22 0	1 2	10 8	34 54	35
145---		118	26 6	1 5	8 6	45 69	45
105---		118	26 6	1 5	8 6	45 69	45
38GF							
102---	230/1	57	14 8	1.2	12 10	32 50	25
102310		70	14 8	1 2	12 10	32 50	25
103---		78	19 0	1 2	10 8	40 62	30
103310		86	21 0	1 2	10 8	36 57	30
103320		104	21 0	1.2	10 8	36 57	30
104---		85	21 9	1 5	10 8	34 54	35
104310		93	22 0	1 2	10 8	34 54	35
145---		118	26 6	1 5	8 6	45 69	45
105---		118	26.6	2 2	8 6	44 68	45
106---		150	36 0	2 2	6 —	51 —	60
103---	208/3	61 5	13 0	1 2	12 10	42 67	20
104---		69 0	14 0	1 5	12 10	39 61	25
145---		90 0	18 6	1 5	10 8	47 83	35
105---		90 0	18 6	2 2	10 8	46 81	35
106---		110.0	23 0	2.2	8 6	66 89	40
103---	230/3	53 5	11 5	1 2	12 10	52 82	20
104---		60 0	12 6	1.5	12 10	47 74	25
145---		78.0	16 1	1 5	12 10	37 59	30
105---		78 5	16 1	2 2	12 10	36 57	30
106---		100	20.5	2.2	10 8	46 82	35
104---	460/3	30 0	6 5	1 5	14 —	104 —	15
145---		39 3	8 3	1 5	14 —	84 —	15
105---		39 3	8 3	2 2	14 —	79 —	15
106---		50 0	10 3	2 2	12 —	107 —	20

FLA — Full Load Amps
LRA — Locked Rotor Amps
*Maximum dual element fuse size.
†Wire sizes and lengths based on copper wire
--- Electrical data shown applicable to all models

NOTE:
Motors and controls will operate satisfactorily 10% above and 10% below unit voltage. On 3-phase units, phases must be balanced within 2%. Control circuit voltage is 24 volts on all units.

START-UP INSTRUCTIONS

38GF Units — Crankcase heater should be energized a minimum of 4 hours before starting unit.

Start Procedure (38GC and 38GF)

1. Backseat (open) liquid and suction line service valves.

> CAUTION: Service valves have Teflon washer. Do not overtighten (finger pressure will seal). Do not exceed 10 ft-lb torque when tightening.

2. Close electrical disconnects energizing entire system.
3. Set room thermostat to desired temperature.
4. Set room thermostat to "Cool" and fan switch as desired ("Fan") ("Auto").

Motors and controls will operate satisfactorily 10% above and 10% below unit voltage (Table 5).

Do not connect charging hoses to capillary controlled system during initial start procedure. (Loss of charge from this procedure may result in capacity reduction.) If necessary to add manifold gages for servicing, refer to Carrier Standard Service Techniques Manual, Chapter 1, pages 1-5, Fig. 8, for bypass method of returning charge to system.

COMPRESSOR

38GC101 and 38GC,GF102,103 Unit Single-Phase Compressors of the split capacitor (PSC) type require an equalized system pressure to start. (See Physical Data table for compressor type.)

When supply voltage is within 10% limit and compressor does not start, give compressor a temporary capacitance boost. See Carrier Standard Service Techniques Manual, Chapter 2, for details. Use a 130 mfd start capacitor. Run compressor for 10 minutes then shut off and allow system pressure to equalize. Try restarting without boost capacitor. If after two attempts (without boost capacitor) the compressor does not start, add an accessory start capacitor relay package.

Compressor Protection

38GF UNITS have a high pressurestat located on liquid line and a low pressurestat located on suction line. High pressurestat has black leads and low pressurestat has blue leads. High pressurestat settings are· cutout, 428 ± 5 psig; cut-in, 320 ± 20 psig. Low pressurestat settings are: cutout, 27± 4 psig; cut-in, 60 + 15 psig, -0 psig.

38GC UNITS have a high-pressure relief valve located in compressor. Relief valve opens at a pressure differential of approximately 600 psi between suction and discharge. 38GC units *prior* to serial number A-900001 were equipped with low pressurestat located on suction service valve. Low pressurestat settings are: cutout, 31 ± 4 psig; cut-in, 60 + 15 psig, -0 psig. All units between serial no. A-900001 and C-962493 not equipped with low-pressure switch. 38GC units (using 06R compressors) from serial no. C-962493 are equipped with liquid line low pressurestat. Settings are: cutout, 27 ± 4 psig; cut-in, 60 + 15 psig, -0 psig.

Table 6 — Service Data

COND UNIT		38GC 101	38GC,GF 102		103			104		145	105	38GF 106
R-22 CHG* (lb-oz)	GC	2-7	3-2	3-2	4-6	4-9	4-6	4-7	4-10	5-6	6-6	–
	GF	–	3-10	3-10	4-14	5-1	4-14	5-2	5-3	6-9	7-8	8-3
COMPRESSOR		38GC	38GC	38GC	06R	38GC	38GC	06RC	38GC	06R	06R	06R
1-Phase		400224	400214	402374	C3526CB	401404	402364	3926CB	401564	C5425CV	C5425CV	C7022CV
3-Phase	208 v	–	–	–	F3522CW	–	–	F3922CW	–	F5422CW	F5422CW	F7022CW
	230 v	–	–	–	G3522CW	–	–	G3922CW	–	G5422CW	G5422CW	G7022CW
	460 v	–	–	–	–	–	–	H3922CW	–	H5422CW	H5422CW	H7022CW
Type Start (1-Ph)		PSC	PSC	PSC	CSR†	CSR†	PSC	CSR	CSR	CSR	CSR	CSR
Oil Recharge (oz)		21	40	39	36	40	29	36	46	72	72	72
COND FAN		Propeller Type — Direct Drive										
Rpm	GC	1650	1650	1650	1050	1050	1050	1050	1050	1050	825	–
Rpm	GF	–	1050	1050	1050	1050	1050	1050	1050	1050	825	825
Diam (in.)	GC	16	16	16	18	18	18	20	20	20	22	–
Diam (in.)	GF	–	18	18	18	18	18	20	20	20	22	22
Cfm		2300	2400	2400	2200	2200	2200	2900	2900	2900	3900	3900

38GC102310,103310,104310; 38GF102310,103310,104310

38GC,GF103320

CSR — Capacitor Start

PSC — Permanent Split Capacitor

*Factory refrigerant charge adequate when condensing units are connected to *Carrier approved evaporators* with up to 25 ft of tubing See Refrigerant charging for details

†38GC103 units are permanent split-capacitor type

SINGLE-PHASE compressor motors in 38GC101, 38GC,GF102, 103, 104 units are protected by an internal current and temperature sensitive overload.

Single-phase 38GC,GF145, 105 and 38GF106 unit compressors are protected by an internal thermostat and external current overloads.

THREE-PHASE unit compressors are protected by an internal thermostat and external current overloads.

Internal temperature-sensitive overloads reset automatically when internal motor temperatures drop to a safe level (overloads may require up to 30 minutes to reset).

When an internal overload is suspected of being open, check by using an ohmmeter or continuity tester. See Carrier Standard Service Techniques Manual, Chapter 2, for complete instructions.

TIME GUARD CIRCUIT (38GC145, 105 and all 38GF units) provides for a 5-minute delay before restarting compressor after shutdown for any reason. On starting, the time guard timer causes a delay of 15 seconds after thermostat closes before compressor will start. On compressor shutdown, the timer delays compressor restarting for 4 minutes 45 seconds.

Compressor Removal

1. Shut off power to unit. Vent refrigerant to atmosphere or use refrigerant removal methods shown in Carrier Standard Service Techniques Manual, Chapter 1.
2. Remove top grille and rear access panel.
3. Remove condenser fan motor orifice assembly. Fan motor wires do not have to be disconnected.
4. Remove compressor sound shield (if supplied).
5. Remove power leads from compressor terminal box, and pressure relief plug from suction line. Unsweat suction and hot gas lines.
6. Remove compressor hold-down bolts. Lift compressor out thru top of unit.

PUMPDOWN PROCEDURE

The 38GC and GF units may be pumped down in order to make repairs on low side of system without losing complete refrigerant charge.

1. Attach pressure gage to suction service valve gage port.
2. Frontseat the liquid line valve.
3. Jumper low-pressure switch.
4. Start unit and run until suction pressure reaches 5 psig (see Caution).
5. Shut unit off and frontseat suction valve.
6. Vent remaining pressure to atmosphere.

CAUTION: The 38GC and GF condensers will hold only factory-supplied amount of refrigerant. Additional refrigerant may cause 38GF units to cycle on high pressurestat and 38GC units to relieve pressure thru internal pressure relief valve (indicated by a sudden rise of suction pressure) before suction pressure reaches 5 psig. If this occurs, shut unit off immediately, frontseat suction valve and vent remaining pressure to atmosphere.

PRESSURE RELIEF PLUG

This plug is a protective device which melts at 210 F relieving excessive system pressure. Remove plug when soldering on suction tube. For plug replacement, order Carrier part no. EK02JA203.

REFRIGERANT CHARGING

38GC Units contain correct operating charge for complete system when connected to Carrier approved evaporators (capillary tube or thermal expansion valve controlled) with up to 25 ft of tubing. When over 25 ft of tubing is used, additional charge may be required. Use *Charging Chart Method* (when available) to check refrigerant charge or add charge to Carrier approved systems. To recharge these systems, use *Weight Method* when 25 ft or under of interconnecting tubing is used; *Charging Chart Method* when over 25 ft of tubing is used. When charging charts are not available or when 38GC condensing unit is connected to other than a Carrier evaporator, use *Weight Method* of recharging.

Do not connect charging hoses to capillary controlled systems during initial start procedure. If necessary, to add manifold gages for servicing, refer to Carrier Standard Service Techniques Manual, Chapter 1, pages 1-5, Fig. 8, for bypass method of returning charge to system.

CAUTION: Do not overcharge these systems. A small overcharge may result in compressor damage due to refrigerant flooding.

38GC CHARGING METHODS – When required, evacuate 38GC systems to 5000 microns (29.7-in. vacuum) before recharging. Refer to Carrier Standard Service Techniques Manual, Chapter 1, for system evacuation-dehydration instructions and details of charging instructions listed below.

Charging Chart Method

TXV Systems – Use correct charging chart (Fig. 3 thru 8). See Carrier Standard Service Techniques Manual, Chapter 1, for procedure.

Capillary Tube Systems – Use correct charging chart (Fig. 9 thru 24). 38GC capillary tube systems are charged correctly when intersection of system

suction and discharge pressure lines on charging chart falls on intersection of indoor air wet bulb (ewb) and outdoor dry bulb temperature lines.

Weight Method – Refer to Table 6 or unit nameplate for correct system refrigerant charge. Blow any refrigerant remaining in system before recharging.

When system is not evacuated, subtract the following amount from total charge (Table 6).

38GC101, 38GC102 – .10 lb (1.6 oz)
38GC103, 104, 145, 105 – .20 lb (3.2 oz)

Keep refrigerant recharge within one oz of specified charge on 38GC101, 102 systems, and within 2 oz on 38GC103, 104, 145, 105 systems.

Dial-a-Charge charging cylinder is an accurate device used to recharge systems by weight. These cylinders available at refrigeration supply firms.

38GF Units contain correct operating charge for complete system when connected to Carrier approved evaporators (capillary tube or thermal expansion valve controlled) with up to 25 ft of tubing. When over 25 ft of tubing is used, additional charge may be required. Use *Charging Chart Method* (when available) to check refrigerant charge or add charge to Carrier approved systems. To recharge these systems, use *Weight Method* when 25 ft or under of interconnecting tubing is used; *Charging Chart Method* when over 25 ft of tubing is used. When charging charts are not available or when 38GF condensing unit is connected to other than a Carrier evaporator, use *Weight Method* of recharging.

A satisfactory operating charge can be obtained on 38GF thermal expansion valve systems by using *Sight Glass Method.* This method may not provide optimum charge.

38GF CHARGING METHODS – When required, evacuate 38GF systems to 5000 microns (29.7-in. vacuum) before recharging. Refer to Carrier Standard Service Techniques Manual, Chapter 1, for system evacuation-dehydration instructions and details of charging instruction listed below.

Charging Chart Method

TXV Systems – Use correct charging chart (Fig. 3 thru 8). See Carrier Standard Service Techniques Manual, Chapter 1, for procedure.

Capillary Tube Systems – Use correct charging chart (Fig. 9 thru 24). 38GF capillary tube systems are charged correctly when intersection of system suction and discharge pressure lines on charging chart falls on intersection of indoor air wet bulb (ewb) and outdoor dry bulb temperature lines.

Weight Method – Refer to Table 6 or unit nameplate for correct system refrigerant charge. Blow any refrigerant remaining in system before recharging.

When system is not evacuated, subtract the following amount from total charge (Table 6).

38GF101, 102 – .10 lb (1.6 oz)
38GF103, 104, 145, 105, 106 – .20 lb (3.2 oz)

Keep refrigerant recharge within one oz of specified charge on 38GF101, 102 systems and within 2 oz on 38GF103, 104, 145, 105 and 106 systems.

Dial-a-Charge charging cylinder is an accurate device used to recharge systems by weight. These cylinders available at refrigeration supply firms.

Sight Glass Method – A satisfactory operating charge can be obtained on 38GF TXV systems by charging to a clear sight glass. For optimum charge, use Charging Chart Method.

Elevate high-side pressure to 380 ± 10 psig by blocking condenser fan discharge or condenser entering air. Service access panel may be adjusted to bypass entering air. (Do not operate without panel in place except during charging procedure.) Charge to a clear sight glass while holding high-side pressure constant.

38GF106 TXV Systems – Add 11 oz of refrigerant after clear sight glass is obtained for correct charge.

THERMAL EXPANSION VALVE SYSTEMS

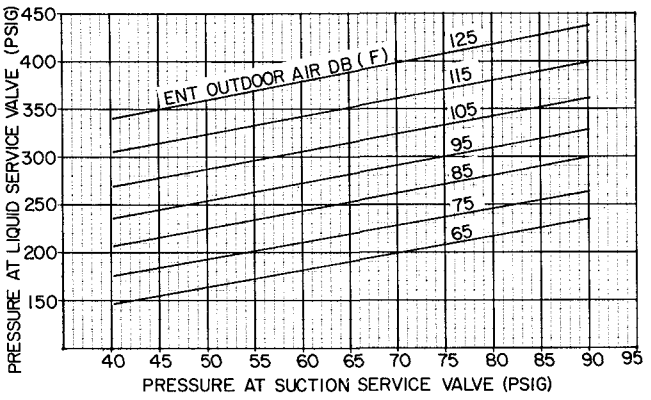


Fig. 3 – 38GC,GF102 Charging Chart

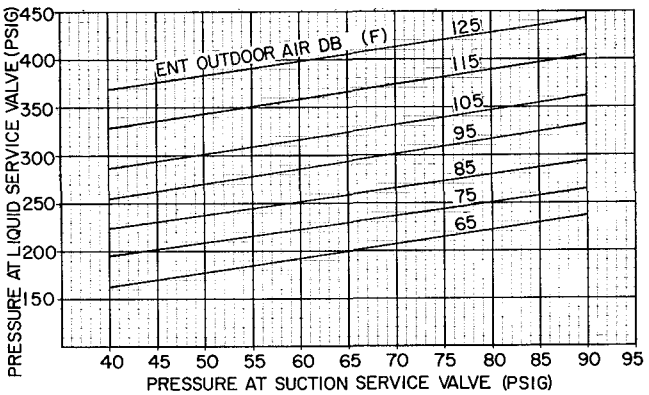


Fig. 4 – 38GC,GF103 Charging Chart

THERMAL EXPANSION VALVE SYSTEMS (cont)

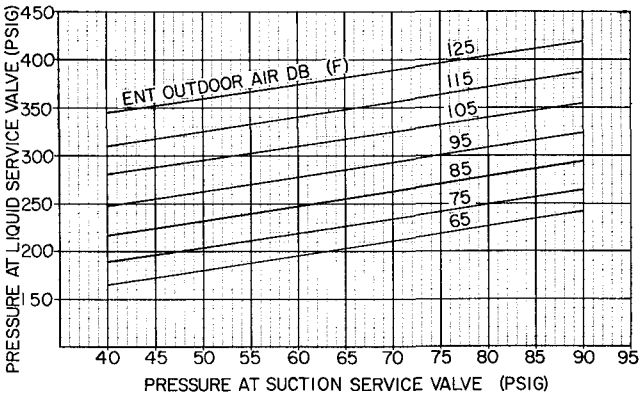


Fig. 5 – 38GC,GF104 Charging Chart

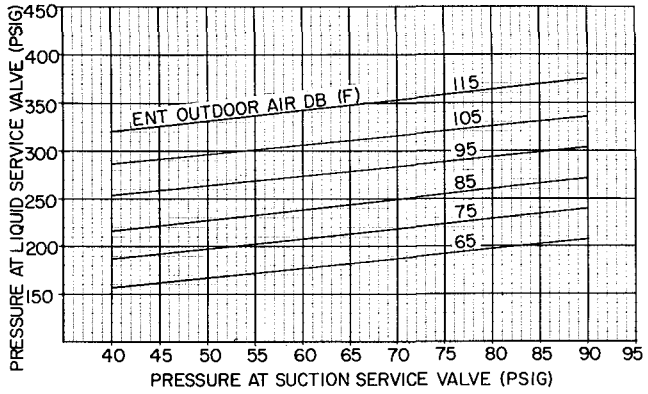


Fig. 6 – 38GC,GF145 Charging Chart

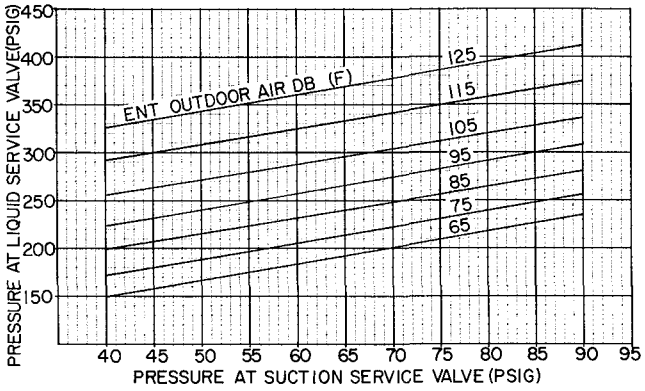


Fig. 7 – 38GC,GF105 Charging Chart

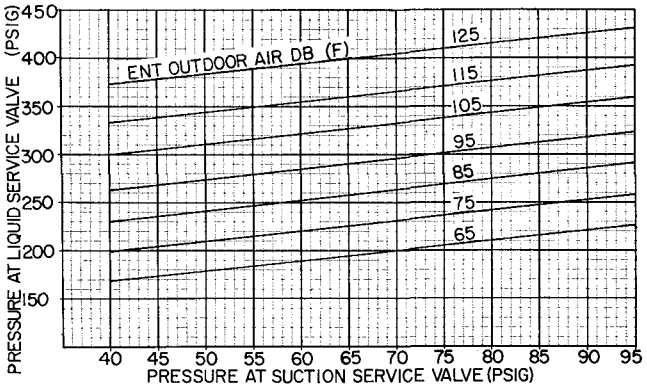


Fig. 8 – 38GF106 Charging Chart

CAPILLARY SYSTEMS

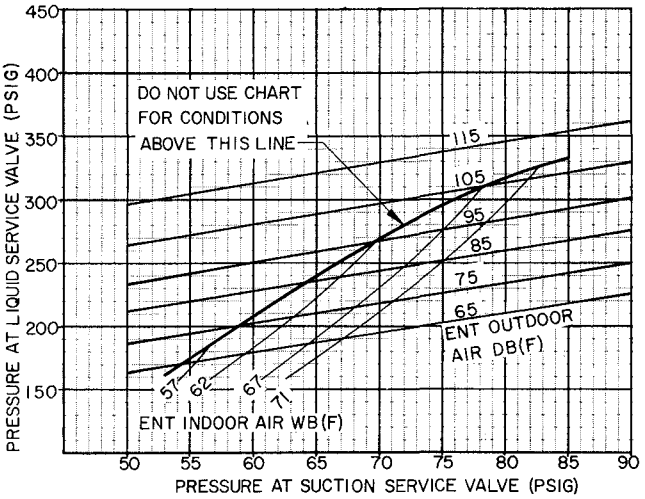


Fig. 9 – 38GC101/28GC, 40GC or 40CL001 Charging Chart

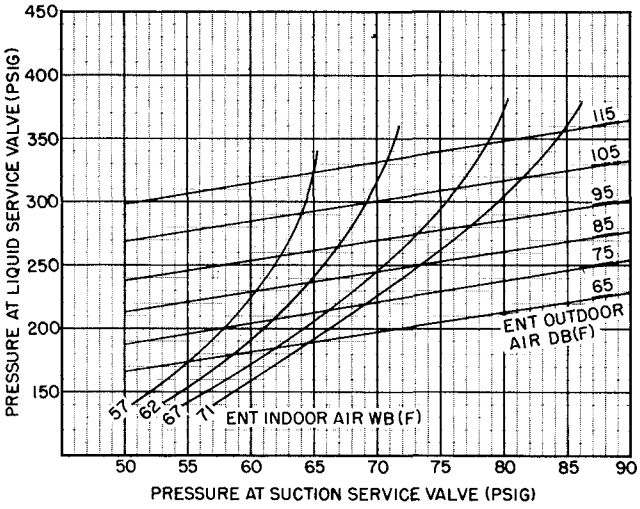


Fig. 10 – 38GC101/28SE001 Charging Chart

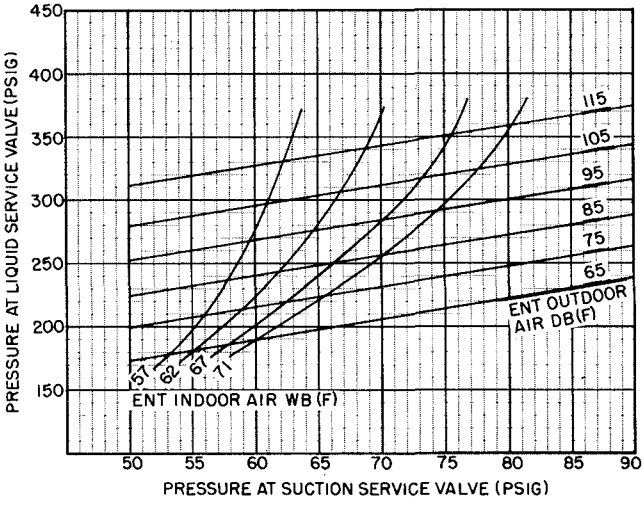


Fig. 11 – 38GC,GF102/28SE002 Charging Chart

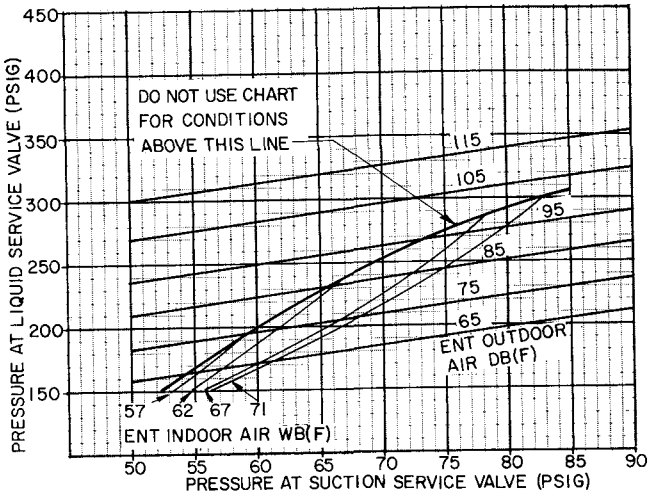


Fig. 12 – 38GC101/28GC, 40GC or 40CL002 Charging Chart

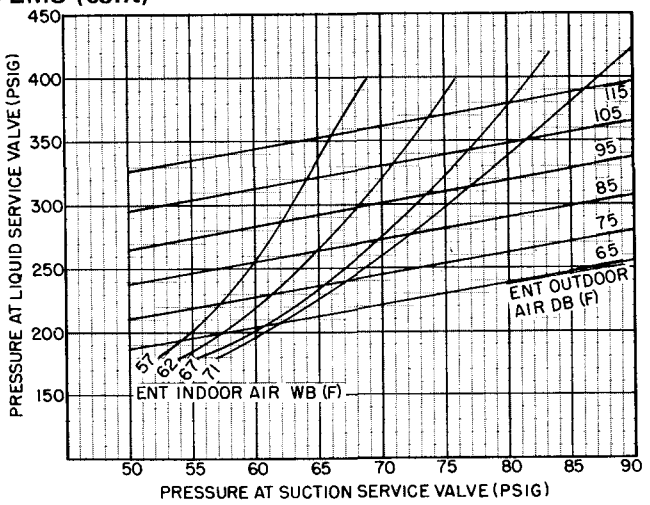


Fig. 15 – 38GF103/28SE003 Charging Chart

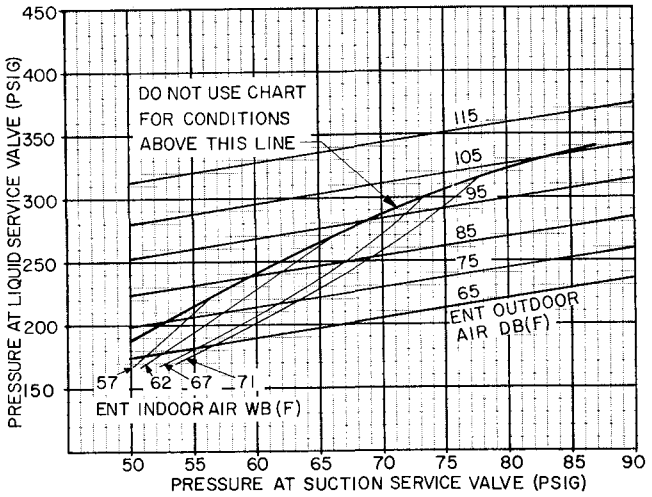


Fig. 13 – 38GC,GF102/28GC, 40GC or 40CL002 Charging Chart

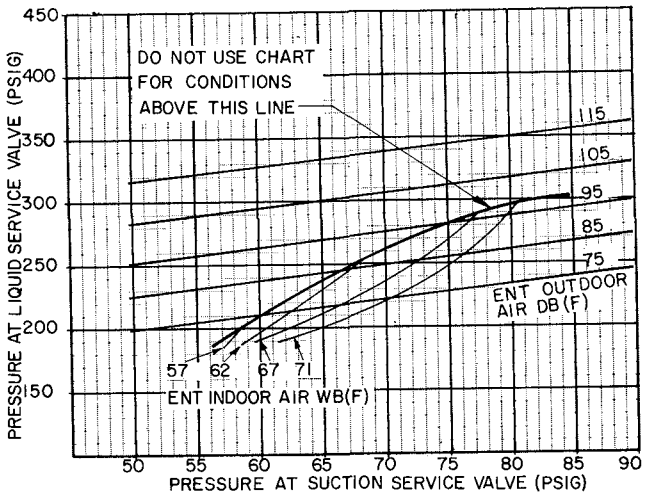


Fig. 16 – 38GC,GF102/28GC, 40GC or 40CL003 Charging Chart

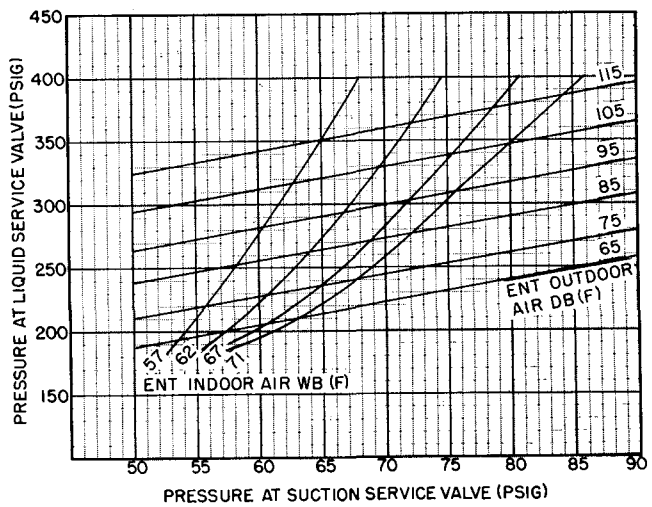


Fig. 14 – 38GC103/28SE003 Charging Chart

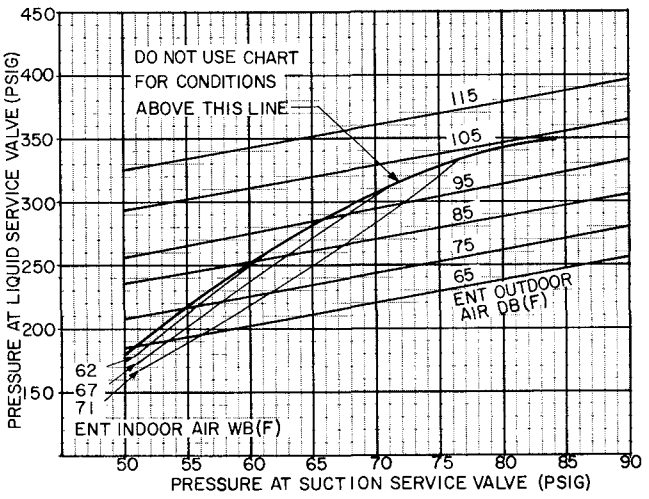


Fig. 17 – 38GC,GF103/28GC, 40GC or 40CL003 Charging Chart*

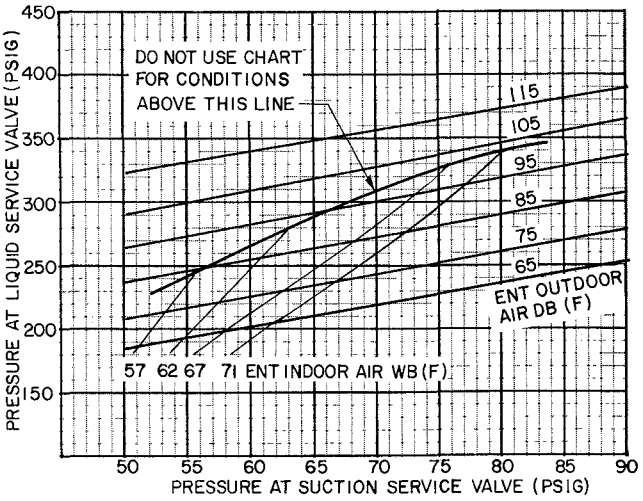


Fig. 18 – 38GC103310, 320; 38GF103310, 320/28GC or 40GC003 Charging Chart

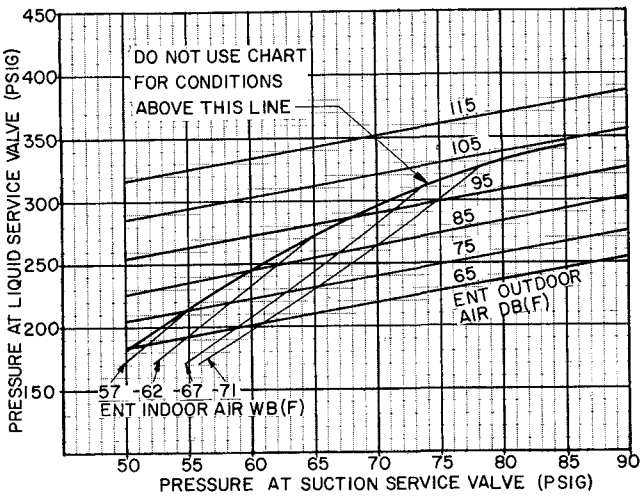


Fig. 21 – 38GC,GF104/28GC, 40GC or 40CL004 Charging Chart

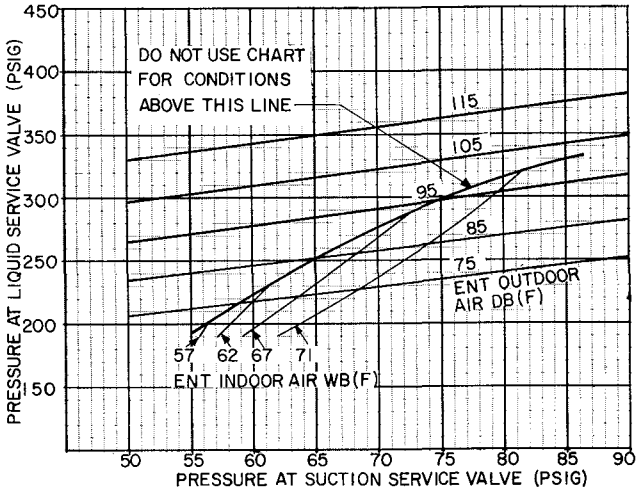


Fig. 19 – 38GC,GF103/28GC, 40GC or 40CL004 Charging Chart*

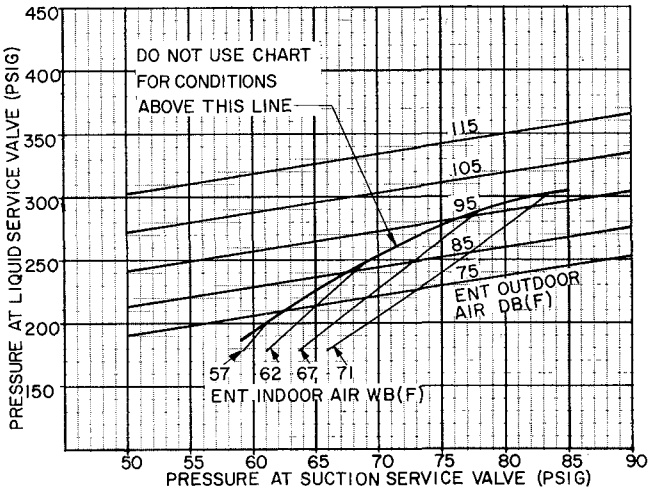


Fig. 22 – 38GC,GF104/ 28GC or 40GC005 Charging Chart

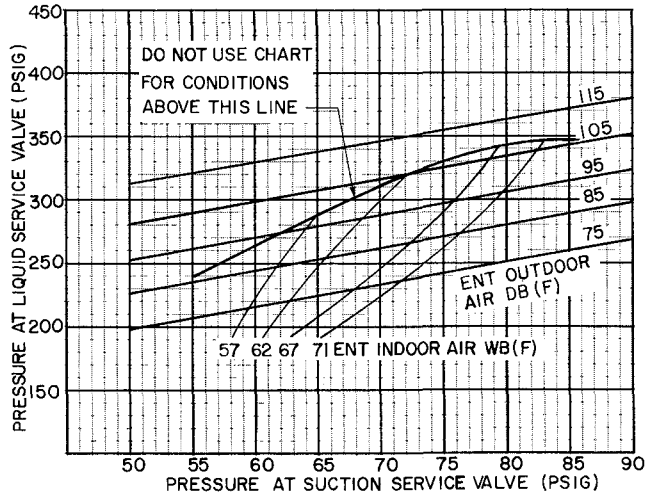


Fig. 20 – 38GC103310, 320; 38GF103310, 320/28GC or 40GC004 Charging Chart

*Use Charging Charts, Fig. 18 or 20 for 38GC103310,320, 38GF103310,320/28GC, 40GC systems.

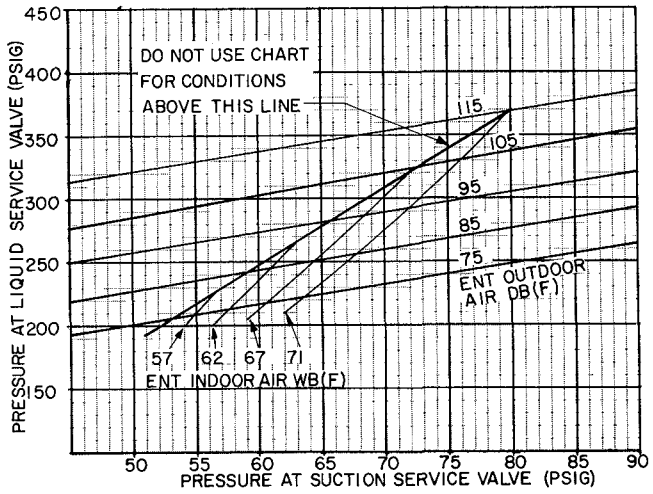


Fig. 23 – 38GC,GF145/ 28GC or 40GC005 Charging Chart

CAPILLARY SYSTEMS (cont)

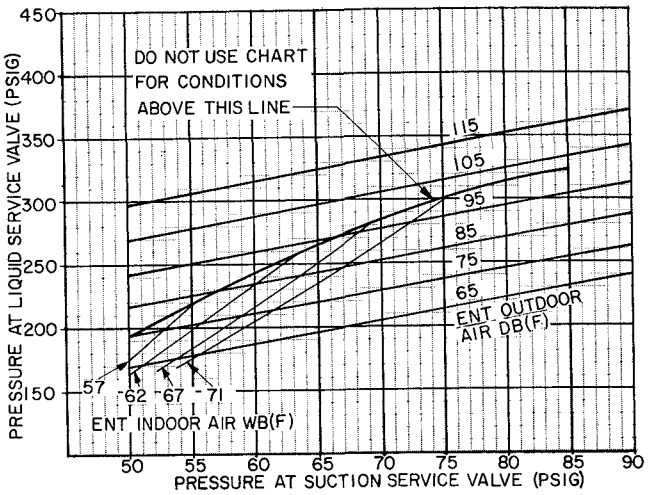


Fig. 24 – 38GC,GF105/ 28GC or 40GC005 Charging Chart

COMPATIBLE FITTING REPAIR

Leaking Mechanical Connection – Frontseat condensing unit service valves and relieve refrigerant pressure in tubing Back locknut off Compatible Fitting onto tube. Cut fitting between threads and seal ring head as shown in Fig. 25. Remove tubing section remaining in threaded portion of fitting. Discard locknut.

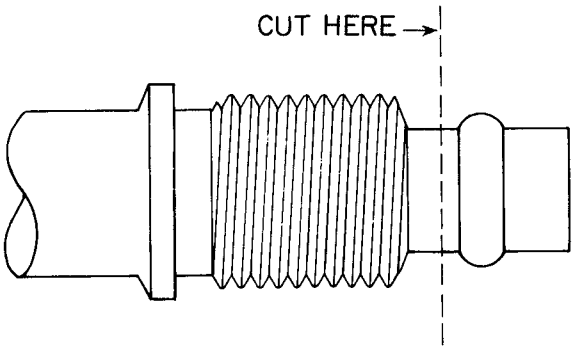


Fig. 25 – Repair of Mechanical Connection

Clean, flux, and insert new tube end into remaining portion of Compatible Fitting. *Wrap valve base in wet rag.* Heat and apply low temperature (450 F) solder.

Leaking Sweat Connection – Frontseat service valves and relieve refrigerant pressure in tubing. Clean and flux area around leak and apply low temperature (450 F) solder.

Evacuate or purge evaporator coil and tubing system. Add refrigerant charge (see charging instructions).

CONDENSER

Coil Cleaning – Clean by washing with dry refrigerant, low-pressure water, or steam.

Fan Position – Required fan position is shown in Fig. 26. Adjust fan by loosening setscrews and moving blades up or down.

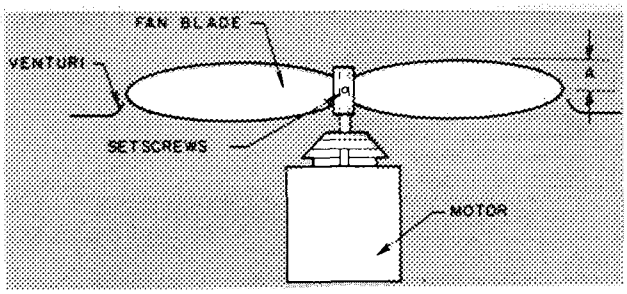


Fig. 26 – Condenser Fan Position

Table 7 – Fan Positions

UNIT 38	DIMENSION "A" (in.)
GC101, 102, 103	1¼
GC104, 145	1½ (Lau)
	1 (Brookside)
GC105	1⅞
GF102, 103	1⅝ (Lau)
	1 (Brookside)
GF104, 145	1½
GF105, 106	1⅞

Fan Motor Removal

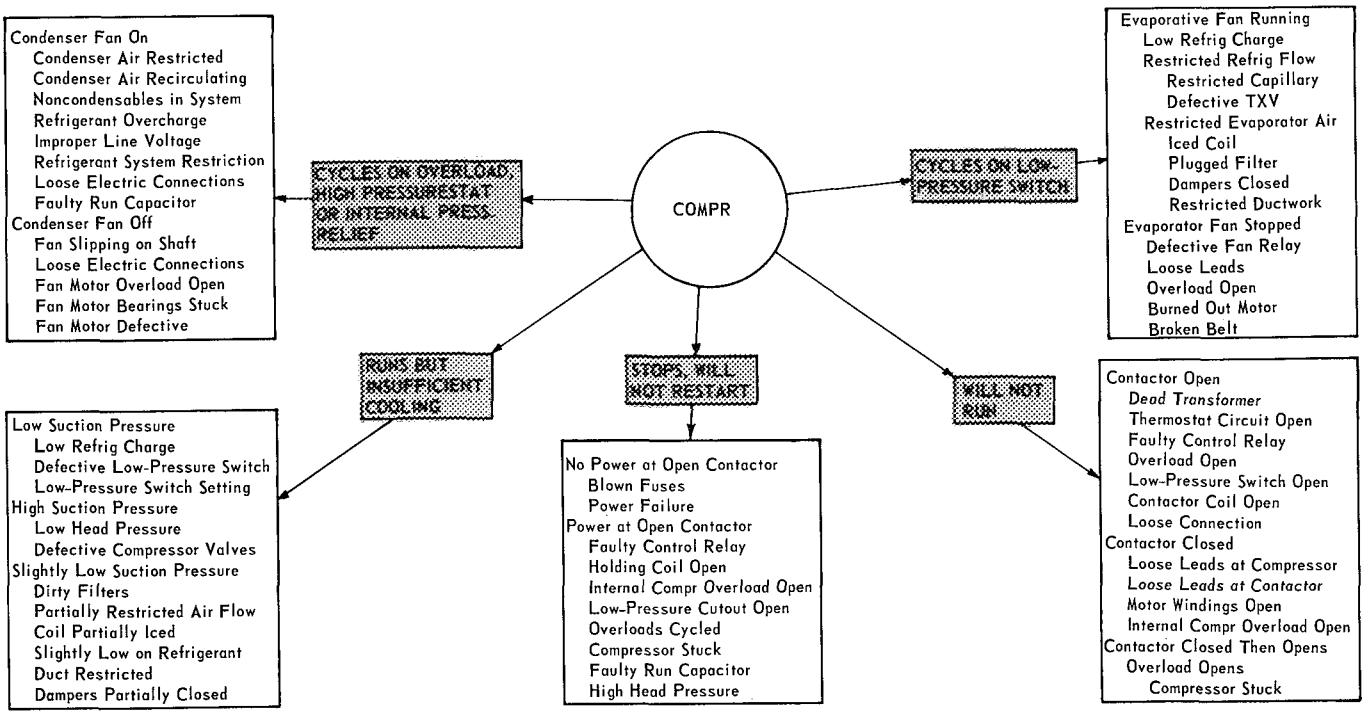
1. Shut off power to unit.
2. Remove unit top cover (grille), rear access panel and control box cover.
3. Disconnect fan motor wires from fan capacitor and control relay or contactor. Pull wires thru rear of control box.
4. Loosen setscrews holding fan to motor shaft and remove fan.
5. Remove bolts holding fan motor to motor mounting bracket. Remove motor thru top of unit.

LUBRICATION

Fan Motor Bearings are prelubricated for three years heavy duty or five years normal duty. When lubrication is necessary, send motor to authorized motor repair shop.

Compressor contains factory oil charge. When oil is lost, see Table 6 for oil charge and Carrier Standard Service Techniques Manual, Chapter 1, page 1-21, for instructions. Use Carrier PP33-1, Texaco Capella B or Suniso 3 G oil.

TROUBLESHOOTING CHART



For replacement items use Carrier specified parts.

Manufacturer reserves the right to change any product specifications without notice.

CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK

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