Carrier®
HEATING & COOLING

38AE
012,014,016
Air-Cooled Condensing Units

Installation, Start-Up and Service Instructions

50 and 60 Hz

INSTALLATION

Step 1 — Complete Pre-Installation Checks

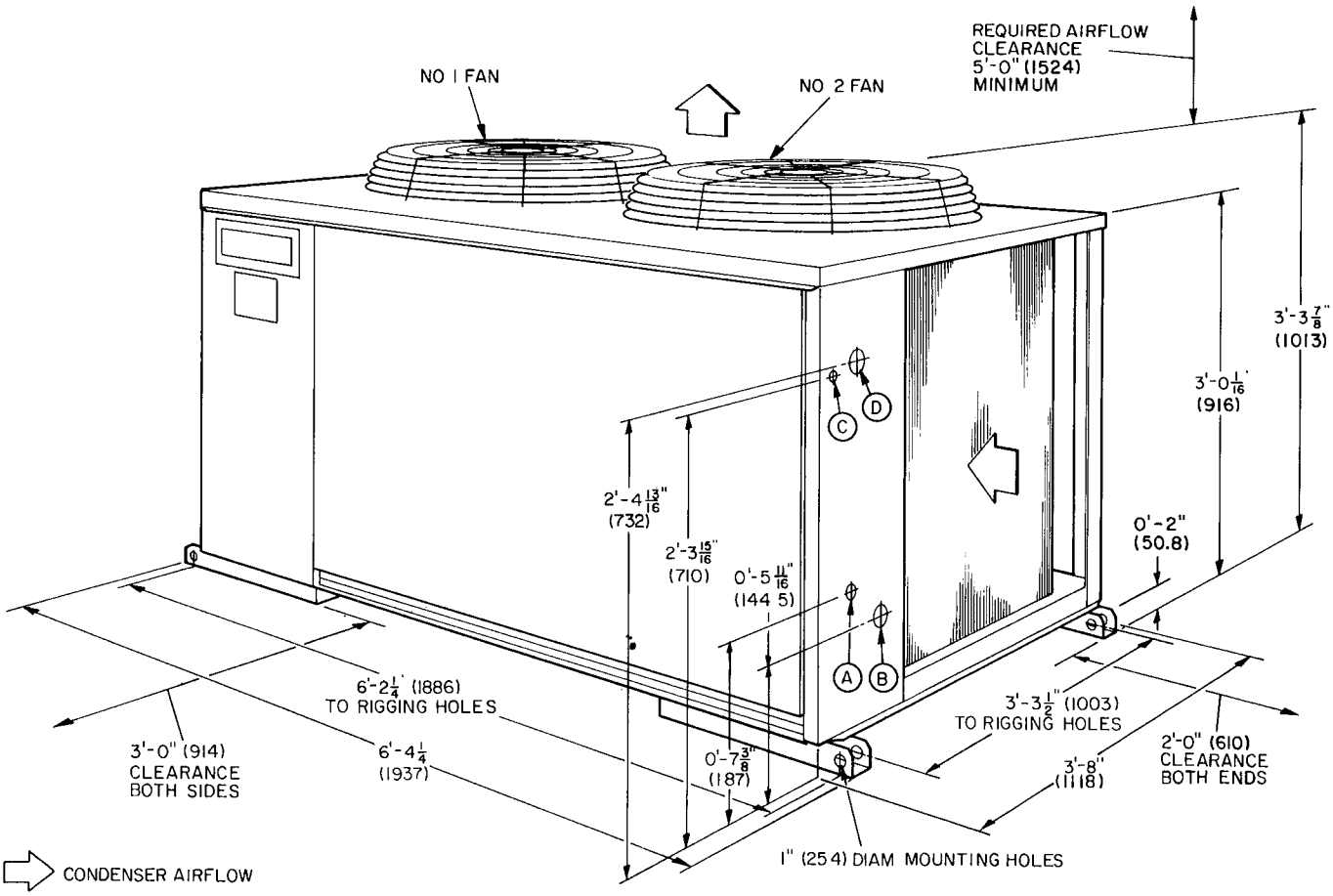
UNCRATE UNIT — Remove unit packaging except for the top skid assembly, which should be left in place until after the unit is rigged into place.

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

CONSIDER SYSTEM REQUIREMENTS

- Consult local building codes and National Electrical Code (NEC, U.S.A.) for special installation requirements.
- Allow sufficient space for airflow clearance, wiring, refrigerant piping, and servicing unit. See Fig. 1. See Fig. 2 for unit component locations.
- Locate unit so that outdoor coil (condenser) airflow is unrestricted on all sides and above.
- Unit may be mounted on a level pad directly on the base channels or mounted on raised pads at support points. See Table 2 for weight distribution based on recommended support points.

  NOTE: If vibration isolators are required for a particular installation, use the data in Table 2 to make the proper selection.



LEGEND

A — 1¼ in. (32) diam. knockout for ⅝-in. (16) ODM liquid line connection
B — 1¾ in (44 5) diam knockout for 1⅛ in (28 6) (38AE012); 1⅜ in (35) suction line connection (38AE014,016)
C — ⅞-in (22.2) diam knockout for control power
D — 2-in (50 8) diam knockout for unit power

NOTES:
1 SERVICE AREAS — Allow 3 ft (914) on both sides and 2 ft (610) on both ends of unit for servicing
2 Dimensions in parentheses are in (mm)

Certified dimension drawings are available on request.

Fig. 1 — Physical Data and Dimensions (ft-in.)

Book 1 | 1 PC 111 Catalog No 533-816 Printed in U S.A. Form 38AE-17SI Pg 1 4-92 Replaces: 38AE-10SI
Tab 3a | 2a

Table 1 — Physical Data

ENGLISH

UNIT 38AE	012	014	016
OPERATING WEIGHT (lb)	732	779	789
REFRIGERANT (lb)*	22		
COMPRESSOR	Reciprocating, Hermetic, 6 Cylinder; 1750 Rpm		
Model No.	06DD824	06DD328	06DD537
Oil (pt)	10		
Crankcase Heater Watts	75		
Unloader Setting (psig)			
Load	70 ± 1		
Unload	60 ± 2		
OUTDOOR-AIR FANS	Axial Flow, Direct Drive		
No. ...Rpm	2 1075		
Diameter (in.)	24		
Motor Hp	½		
Nominal Cfm Total	8800		
OUTDOOR COIL			
Face Area (sq ft)	29.2		
Storage Capacity (lb)†	27 2	40.3	39 8
CONTROLS			
Pressurestat Settings (psig)			
High Cutout	395 ± 10		
Cut-in	295 ± 10		
Low Cutout	29 ± 4		
Cut-in	60 + 15 − 0		
FUSIBLE PLUG	200 F		

NEMA — National Electrical Manufacturing Association

*Unit is factory supplied with holding charge only.

†Storage capacity is measured at liquid saturated temperatures of 125 F for 38AE012; 123 F for 38AE014; and 130 F for 38AE016

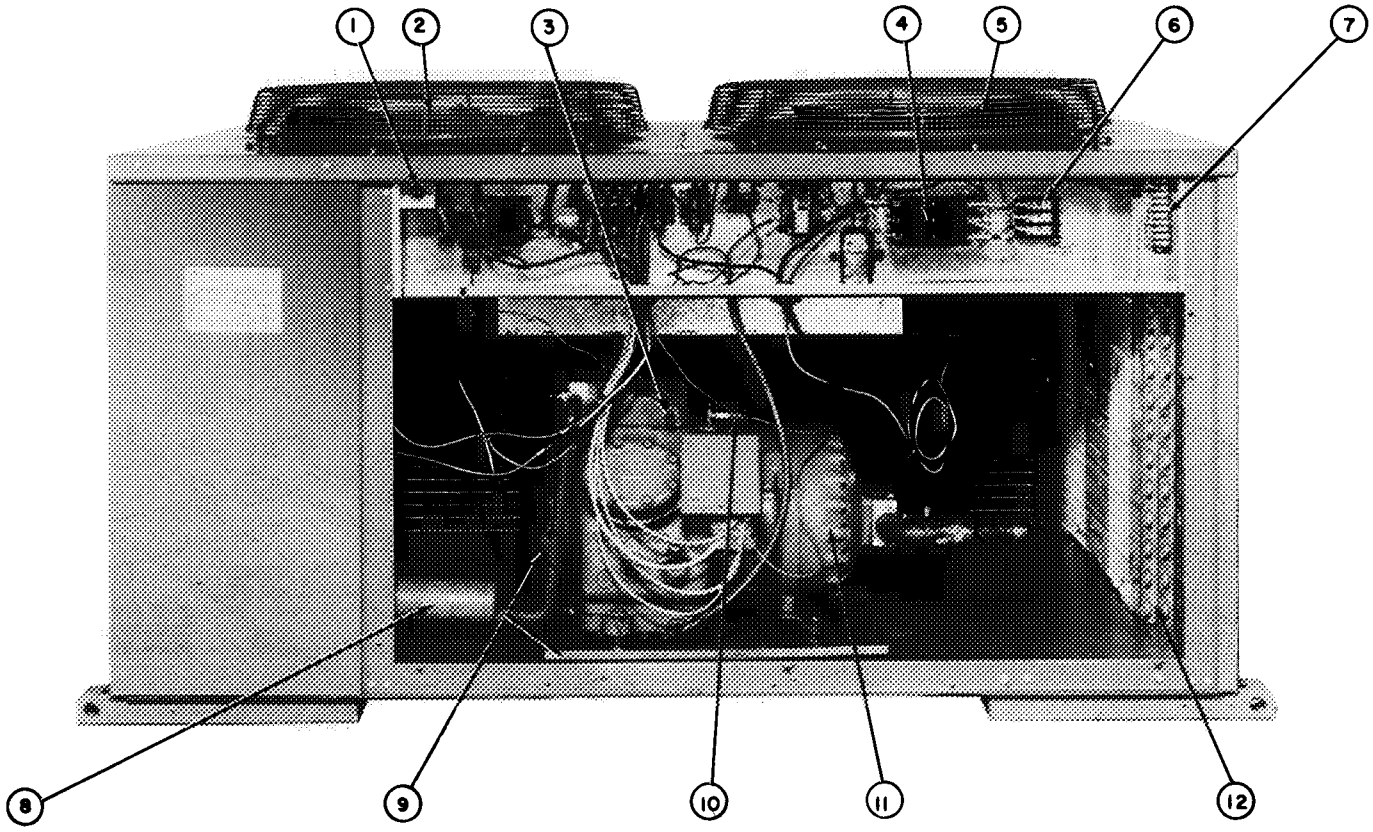
SI

UNIT 38AE	012	014	016
OPERATING WEIGHT (kg)	333	354	359
REFRIGERANT (kg)*	10		
COMPRESSOR	Reciprocating, Hermetic, 6 Cylinder; 29.2 Rps		
Model No.	06DD824	06DD328	06DD537
Oil (L)	4.73		
Crankcase Heater Watts	75		
Unloader Setting (kPa)			
Load	483 ± 6 9		
Unload	414 ± 13 8		
OUTDOOR-AIR FANS	Axial Flow, Direct Drive		
No. ...Rps	2...17.9		
Diameter (mm)	610		
Motor Hp	½		
Nominal L/s Total	4153		
OUTDOOR COIL			
Face Area (sq m)	2.71		
Storage Capacity (kg)†	12 4	18 3	18.1
CONTROLS			
Pressurestat Settings (kPa)			
High Cutout	2724 ± 68 9		
Cut-in	2034 ± 68 9		
Low Cutout	200 ± 27.6		
Cut-in	414 + 103 − 0		
FUSIBLE PLUG	93 3 C		

NEMA — National Electrical Manufacturing Association

*Unit is factory supplied with holding charge only

†Storage capacity is measured at liquid saturated temperatures of 51 7 C for 38AE012; 50 6 C for 38AE014; and 54 4 C for 38AE016



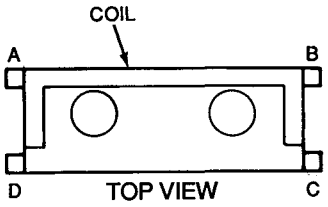
LEGEND

1 — Low-Voltage Fuse
2 — No. 1 Fan
3 — High-Pressure Switch
4 — Circuit Breakers
5 — No. 2 Fan
6 — Terminal Block 1 (Unit Power)
7 — Terminal Block 2 (Control Power)
8 — Muffler
9 — Hot Gas Bypass Piping Stub (⅜-in ODM)
10 — Low-Pressure Switch
11 — Compressor
12 — Wraparound Coil

Fig. 2 — Component Locations

Table 2 — Weight Distribution

UNIT 38AE	WEIGHT — lb (kg)				
	Oper Wt	Support Point			
		A	B	C	D
012	732 (333)	142 (65)	138 (63)	225 (102)	227(103)
014	779 (354)	143 (65)	140 (64)	247 (112)	249 (113)
016	789 (359)	143 (65)	143 (65)	250 (114)	253 (115)



Step 2 — Rig and Mount the Unit

⚠ CAUTION

Be sure unit panels are securely in place prior to rigging.

RIGGING — These units are designed for overhead rigging only. For this purpose, the transverse base channels extend beyond the sides of the unit, with holes provided in end plates to attach cables or hooks. Rig with top skid packaging assembly in place to prevent unit damage by the rigging cable. As further protection for the coil faces, plywood sheets may be placed against the sides of the unit, behind the cables. Run the cables to a central suspension point so that the angle from the horizontal is not less than 45 degrees. Raise and set the unit down carefully.

If it is necessary to roll the unit into position, mount the unit on longitudinal rails, using a minimum of 3 rollers. Apply force to the rails, not the unit. If the unit is to be skidded into position, place it on a large pad and drag it by the pad. Do not apply any force to the unit.

Raise from above to lift unit from the rails or pad when unit is in final position.

COMPRESSOR MOUNTING — As shipped, the compressor is held tightly in place by self-locking bolts. **Before starting unit, loosen self-locking bolts until the flanged washer is still snug but can be moved sideways with finger pressure. Do not remove shipping bolts.**

Step 3 — Complete Refrigerant Piping Connections

SIZE REFRIGERANT LINES — Consider the length of piping required between outdoor unit and indoor unit (evaporator), the amount of liquid lift, and compressor oil return. See Table 3 and also refer to Part 3 of Carrier System Design Manual for design details and line sizing. Refer to indoor installation instructions for additional information.

Table 3 — Liquid Line Data

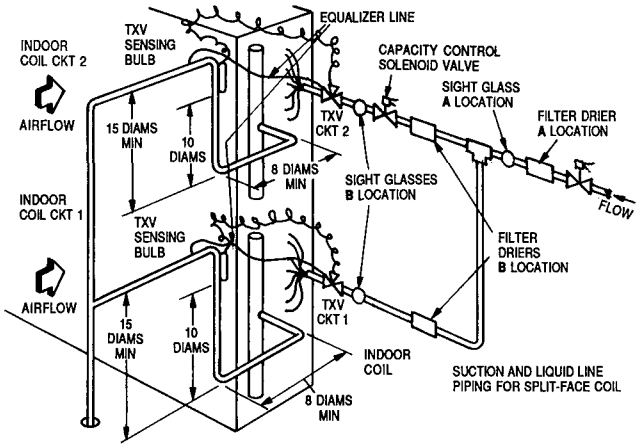
UNIT 38AE	MAX ALLOW. LIQUID LIFT ft (m)	LIQUID LINE		
		Max Allow. Press. Drop psig (kPa)	Max Allow. Temp Loss °F (°C)	Filter Drier and Sight Glass Flare Conn.* in. (mm)
012	52 (15 8)	7 (48.3)	2 (1 1)	5/8
014	67 (20.4)	7 (48 3)	2 (1 1)	5/8
016	82 (25)	7 (48 3)	2 (1 1)	5/8

*Inlet and outlet.

NOTE: Figures shown are for units operating at 45 F (7.2 C) saturated suction and 95 F (35 C) entering air

INSTALL FILTER DRIER(S) AND MOISTURE INDICATOR(S) — Every unit should have a filter drier and liquid-moisture indicator (sight glass). In some applications, depending on space and convenience requirements, it may be desirable to install 2 filter driers and sight glasses. One filter drier and sight glass may be installed at A locations in Fig. 3. Or, 2 filter driers and sight glasses may be installed at B locations.

Select the filter drier for maximum unit capacity and minimum pressure drop. Complete the refrigerant piping from indoor unit to outdoor unit before opening the liquid and suction lines at the outdoor unit.



TXV — Thermal Expansion Valve

Fig. 3 — Locations of Sight Glass(es) and Filter Drier(s)

INSTALL LIQUID LINE SOLENOID VALVE — SOLENOID DROP — It is recommended that a solenoid valve be placed in the main liquid line (see Fig. 3) between condensing unit (38AE) and fan coil (40RR, 40RE). This valve prevents refrigerant migration (which causes oil dilution) to the compressor during the off cycle at low outdoor ambient temperatures. The solenoid should be wired in parallel with the compressor contactor coil. This means of electrical control is referred to as solenoid *drop* control.

INSTALL LIQUID LINE SOLENOID VALVE (OPTIONAL) — CAPACITY CONTROL — If 2-step cooling is desired, place a solenoid valve in the location shown in Fig. 3.

DO NOT USE A RECEIVER — No receiver is provided with the unit. It is recommended that one *NOT* be used.

MAKE PIPING CONNECTIONS — Do not remove plastic dust plugs from suction and liquid line stubs in the compressor compartment until piping connections are ready to be made. Pass nitrogen or other inert gas through piping while brazing to prevent formation of copper oxide.

Install field-supplied thermostatic expansion valve(s) to indoor section. If 2 thermostatic expansion valves are installed for 2-step cooling, install field-supplied liquid line solenoid valve ahead of the second expansion valve.

PROVIDE SAFETY RELIEF — A fusible plug is located on the compressor crankcase (Fig. 4). Do not cap this plug. If local code requires additional safety devices, install them as directed.

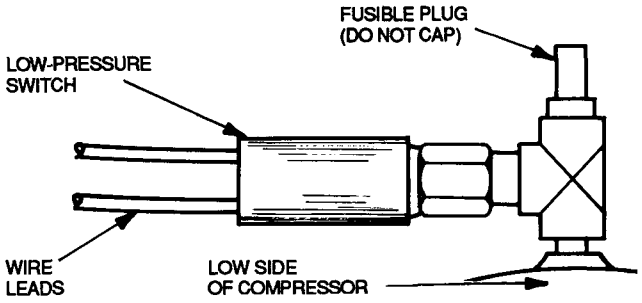


Fig. 4 — Location of Fusible Plug

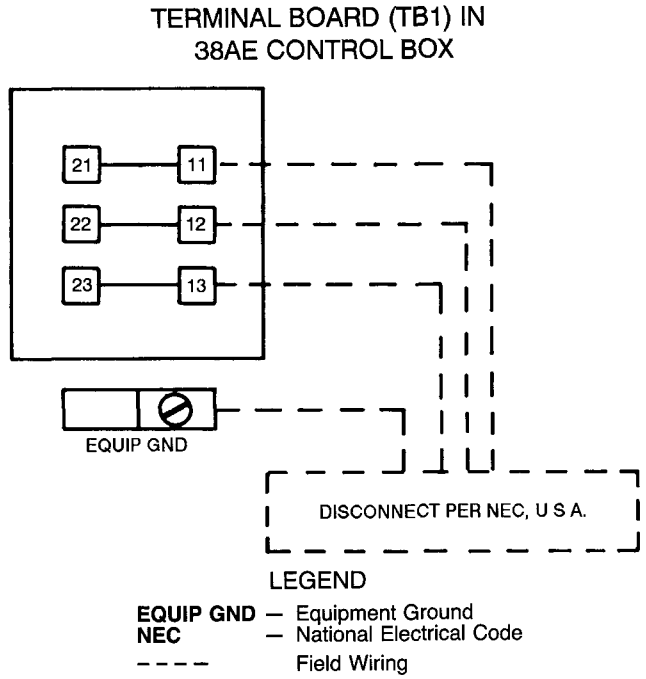


Fig. 5 — Main Power Supply Wiring

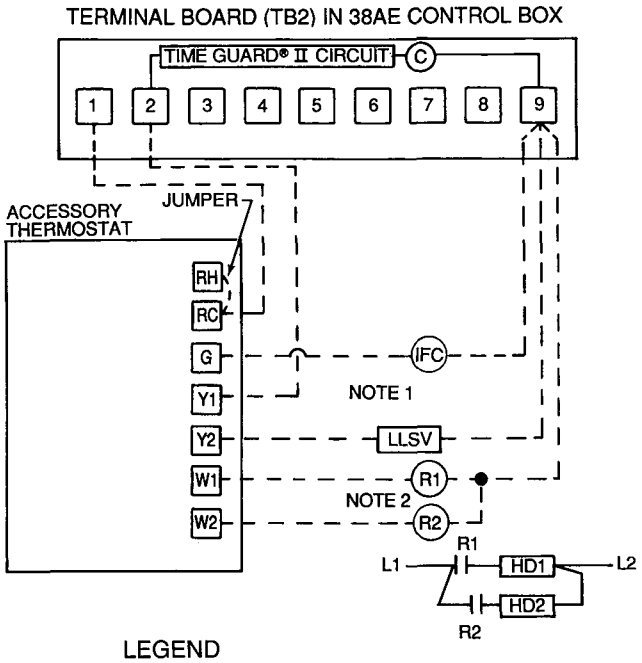
Step 4 — Complete Electrical Connections

POWER WIRING — Unit is factory wired for voltage shown on nameplate. Provide adequate fused disconnect switch within sight from unit and readily accessible from unit, but out of the reach of children. Lock switch open (off) to prevent power from being turned on while unit is being serviced. Disconnect switch, fuses, and field wiring must comply with national and local code requirements.

Route power wires through opening in unit end panel to connection in unit control box as shown on unit label diagram and Fig. 5. Unit must be grounded.

Affix crankcase heater warning sticker to unit disconnect switch.

CONTROL CIRCUIT WIRING — Control voltage is 24 v. See Fig. 6 and unit label diagram for field-supplied wiring details. Route control wires through opening in unit end panel to connection in unit control box.



LEGEND

C — Compressor Contactor
HD — Heating Device
IFC — Indoor-Fan Contactor
LLSV — Liquid Line Solenoid Valve
R — Relay
---- Field Wiring
——— Factory Wiring

NOTES:
1. Combination LLSV plus IFC va should not exceed 30 va.
2. Do not exceed 5 va (24 vac) per coil.
3. If va values shown in Notes 1 and 2 must be exceeded, use accessory relay transformer package 38AE900001.

Fig. 6 — Remote Thermostat Wiring

Table 4 – Electrical Data

(3 Ph/60 Hz)

UNIT 38AE	UNIT							COMPR		FAN MOTORS (Single Phase)			
	Model	Volts			MCA	ICF	MOCP (Fuse)	RLA	LRA	Total Fans	FLA (ea) Fan No.		kW
		Nameplate	Supplied*								1	2	
			Min	Max									
012	501	208-230	187	253	62.5	178	100	43 6	170	2	4.3	3 7	1 41
	201	380	342	418	35.0	101	50	24 0	93		4.3	3 7	
	601	460	414	528	29 1	81	40	20.0	77		2 3	1 9	
	101	575	518	660	22.8	67	35	15 7	62		1.8	1.8	
014	501	208-230	187	253	69.3	199	100	49 3	191	2	4 3	3 7	1 41
	201	380	342	418	38 0	112	60	26 5	104		4 3	3 7	
	601	460	414	528	31 7	84	50	22 1	80		2 3	1 9	
	101	575	518	660	25.6	73	40	17.9	69		1.8	1.8	
016	501	208-230	187	253	87 5	274	125	63 6	266	2	4 3	3 7	1 41
	201	380	342	418	49 3	153	80	36.0	145		4 3	3 7	
	601	460	414	528	40 7	124	60	29 3	120		2.3	1 9	
	101	575	518	660	33 0	100	50	23 8	96		1.8	1 8	

(3 Ph/50 Hz)

UNIT 38AE	UNIT							COMPR		FAN MOTORS 230 v (Single Phase)		
	Model	Volts			MCA	ICF	MOCP (Fuse)	RLA	LRA	Total Fans	FLA (ea) Fan No.	
		Name-plate	Supplied*								1	2
			Min	Max								
012	803	230	198	264	47 5	134	75	32 9	128	2	2 9	3 5
	903	400	342	457	31 4	80	50	20.0	74		2.9	3.5
014	803	230	198	264	51 0	149	75	35 7	143	2	2 9	3.5
	903	400	342	457	34 0	89	50	22 1	83		2 9	3.5
016	803	230	198	264	66 9	206	100	47 9	200	2	2.9	3 5
	903	400	342	457	43 0	121	60	29 3	115		2 9	3 5

FLA – Full Load Amps (Fan Motors)
ICF – Maximum Instantaneous Current Flow during start-up (LRA of compressor plus total FLA of fan motors)
kW – Total Fan Motor Input (kilowatts)
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps per NEC (U S.A), Section 430-24
MOCP – Maximum Overcurrent Protection (amps)
RLA – Rated Load Amps (Compressor)
*Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed limits

START-UP

Evacuate and Dehydrate the entire refrigerant system by either of the methods described in Carrier Standard Service Techniques Manual, Chapter 1, Section 1-7.

Leak Test the entire refrigerant system by the pressure method described in Carrier Standard Service Techniques Manual, Chapter 1, Section 1-6. Use R-22 at approximately 25 psig (172.4 kPa) backed up with an inert gas to a total pressure not to exceed 245 psig (1689 kPa).

Before starting the unit, the crankcase heaters must be on for 24 hours to be sure all the refrigerant is out of the oil. To energize the crankcase heaters, proceed as follows.

1. Set the space thermostat above ambient so there will be no demand for cooling.
2. Close the field disconnect.
3. Turn the fan circuit breaker on. Leave the compressor circuit breakers off. The crankcase heaters are now energized.

Before Starting Unit check the following:

1. Compressor oil level must be at least within sight in the compressor sight glass. Add oil if necessary (see Table 1 and Oil Charge section).
2. Compressor holddown bolts must be snug, but not tight. Refer to Compressor Mounting section and tag on compressor foot.
3. All internal wiring connections must be tight; all barriers and covers must be in place.
4. Electrical power source must agree with unit nameplate rating.
5. All service valves must be open.
6. Crankcase heater must be firmly locked into the compressor crankcase.

Preliminary Charge — Refer to Carrier Standard Service Techniques Manual, Chapter 1, Section 1-8. By the liquid charging method and charging by weight procedure, charge the units with approximately the following amounts of R-22: 38AE012, 22 lb (10 kg); 38AE014, 23 lb (10.5 kg); 38AE016, 23 lb (10.5 kg). See Table 5.

Table 5 — Charging Data (R-22)

UNIT 38AE	REFRIGERANT CHARGE - lb (kg)		CONDENSING TEMP DURING CHARGING - F (C)
	Required Charge Above Clear Sight Glass	Outdoor Unit Total Charge (Approx)	
012	3.0 (1.4)	22 (10)	125 (51.7)
014	4.8 (2.2)	23 (10.5)	123 (50.6)
016	3 4 (1 5)	23 (10.5)	130 (54.4)

Start the Unit — The field disconnect is closed, the fan circuit breaker is closed, and the space thermostat is set above ambient temperature so that there is no demand for cooling. Only the crankcase heaters are energized. After the heaters have been on for 24 hours, the unit can be started.

Close the compressor circuit breakers, and then reset the space thermostat *below* ambient temperature, so that a call for cooling is ensured.

Energize Branch Circuit — *Set room thermostat above ambient temperature.* Close field disconnect switch. Be sure that compressor crankcase heaters are operating. Allow crankcase heaters to operate a minimum of 24 hours before starting unit.

To Start Unit *set room thermostat below ambient.* After starting unit, there will be a delay of at least 3 seconds before compressor starts.

Oil Charge (see Table 1) —Allow unit to run for about 20 minutes. Stop unit and check compressor oil level. Add oil only if necessary to bring oil into view in sight glass. *Use only Carrier-approved compressor oil.* Approved oils are:

Witco Chemical Corp. . . . . .Suniso 3GS
Texaco, Inc. WF32
Petroleum Specialties Co. . . . . Cryol 150

Do not reuse drained oil or use any oil that has been exposed to atmosphere. Procedures for adding or removing oil are given in Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants.

If oil is added, run unit for additional 10 minutes. Stop unit and check oil level. If level is still low, add oil *only after* determining that piping system is designed for proper oil return and that the system is not leaking oil.

Check Operation of all safety controls. Replace all service panels. *Be sure that control panel cover is closed tightly.*

OPERATING SEQUENCE

Cooling — When the first stage (TC1) of the cooling thermostat closes, the timer starts. After approximately 3 seconds, the timer activates the compressor and fan motor no. 1 contactor. When the liquid pressure builds to approximately 257 psig (1772 kPa), fan motor no. 2 is energized.

On demand for additional cooling capacity, the second stage (TC2) of the cooling thermostat closes, energizing a field-supplied liquid line solenoid valve (LLS) which opens. This increases the suction pressure, causing the compressor to operate at higher capacity.

When fan switch is set at AUTO., the indoor-air fan cycles with the compressor. When the switch is set at CONT, the indoor-air fan runs continuously.

At shutdown, the Time Guard® II timer prevents the compressor from restarting for approximately 5 minutes.

In addition, a field-supplied solenoid valve wired in parallel with the compressor contactor coil, shuts off the liquid line to prevent refrigerant migration back to the compressor during the off cycle.

Heating — The heating thermostat (TH) energizes a field-supplied relay which operates heating controls and energizes the indoor-fan relay. When the fan switch is set at AUTO., the indoor-air fan cycles with the heating control. The indoor-air fan runs continuously when the fan switch is set at CONT.

Fan Cycling is employed for head pressure control. The no. 2 fan responds to liquid line pressure, cycling on at approximately 257 psig (1772 kPa) and off at approximately 126 psig (869 kPa).

Winter Start Control (If Required) — Install Accessory Package 38AE900021.

SERVICE

Capacity Control — A suction pressure-actuated unloader controls 2 cylinders and provides capacity control. Unloaders are factory set (see Table 1), but may be field adjusted:

CONTROL SET POINT (cylinder load point) is adjustable from 0 to 85 psig (586 kPa). To adjust, turn control set point adjustment nut (Fig. 7) clockwise to its bottom stop. In this position, set point is 85 psig (586 kPa). Then, turn adjustment counterclockwise to desired control set point. Every full turn counterclockwise decreases set point by 7.5 psig (51.7 kPa).

PRESSURE DIFFERENTIAL (difference between cylinder load and unload points) is adjustable from 6 to 22 psig (41.4 to 152 kPa). To adjust, turn pressure differential adjustment screw (Fig. 7) counterclockwise to its back stop position. In this position, differential is 6 psig (41.4 kPa). Then, turn adjustment clockwise to desired pressure differential. Every full turn clockwise increases differential by 1.5 psig (10.3 kPa).

Head Pressure Control by means of *fan cycling* is a standard feature of 38AE012-016 units. The no. 2 fan cycles in response to changes in liquid pressure. The switch cycles the fan off at 126 ± 4 psig (869 ± 28 kPa) as pressure decreases, and cycles back on at 257 (+5, −0) psig (1772 [+103, −0] kPa).

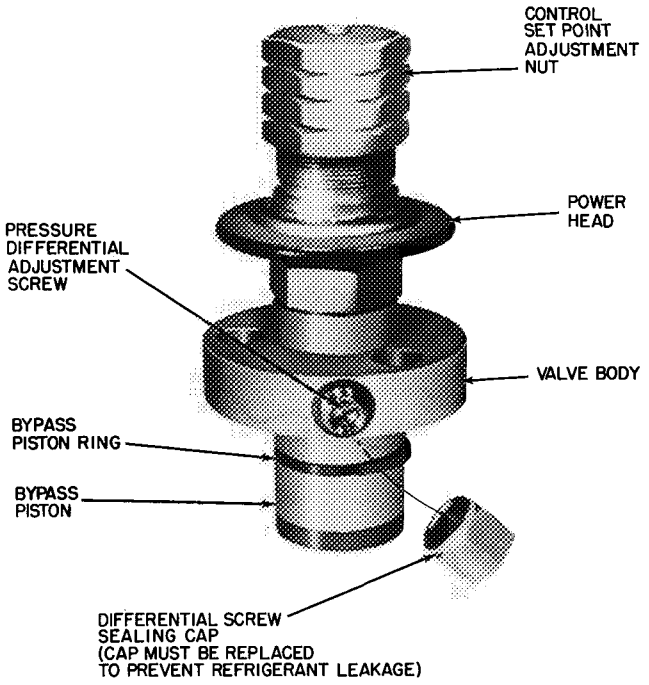


Fig. 7 — Compressor Capacity Control Unloader

Time Guard® II Circuit provides for a delay of approximately 5 minutes before restarting compressor after shutdown from safety device action.

On start-up, the Time Guard II timer causes a delay of approximately 3 seconds after thermostat closes.

On compressor shutdown, the timer recycles for approximately 5 minutes. During this time, the compressor cannot restart.

Refer to Fig. 8 and to label diagram on unit.

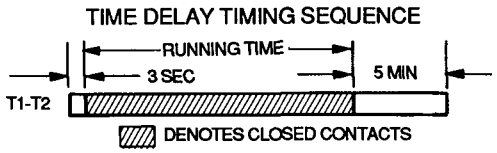


Fig. 8 — Timer Sequence Chart

Winter-Start Control (If Required) — Install Accessory Package 38AE900021.

Crankcase Heater prevents refrigerant migration and compressor oil dilution during shutdown whenever compressor is not operating. It is wired into the control circuit, cycling with the compressor, off when compressor is running, and on when compressor cycles off.

Both compressor service valves must be closed whenever crankcase heater is deenergized for more than 6 hours. The crankcase heater is operable as long as the control circuit is energized.

Outdoor Fans — Each fan is supported by a formed-wire mount bolted to the fan deck and covered with a wire guard. The exposed end of the motor shaft is covered with a rubber boot. In case a fan motor must be repaired or replaced, be sure the rubber boot is put back on when the fan is reinstalled and be sure the fan guard is in place before starting the unit. Figure 9 shows the proper position of the mounted fan. Fan motors have permanently lubricated bearings.

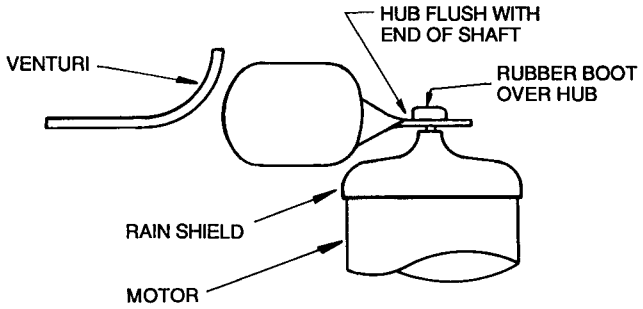


Fig. 9 — Outdoor Fan

Lubrication

FAN MOTORS have sealed lubrication bearings. No provisions for lubrication are made.

COMPRESSOR has its own oil supply. Loss of oil due to a leak in the system should be the only reason for adding oil after the system has been in operation. See Oil Charge section.

Cleaning Coils — The coils can be cleaned with a vacuum cleaner, washed out with water, blown out with compressed air, or brushed *(do not use wire brush)*. Fan motors are drip-proof but not waterproof.

Clean outdoor coil annually or as required by location or outdoor air conditions. Inspect coil monthly, and clean as required. Fins are not continuous through coil sections; dirt and debris may pass through first section, become trapped between the 2 rows of fins (38AE012) or 3 rows of fins (38AE014, 016) and restrict outdoor airflow. Use a flashlight to determine if dirt or debris has collected between coil sections. Clean coil as follows:

1. Turn off unit power.
2. Remove screws holding rear corner posts and top cover in place. Pivot top cover up 12 to 18 in. (305 to 457 mm) and support with a rigid support. See Fig. 10.
3. Remove clips securing tube sheets together at the return bend end of the coil. Carefully spread the ends of the coil rows apart by moving the outer sections. See Fig. 11.
4. Using a water hose, or other suitable equipment, flush down between the sections of coil to remove dirt and debris.
5. Clean the remaining surfaces in the normal manner.
6. Reposition outer coil sections.
7. Reinstall clips which secure tube sheets.
8. Replace top cover and rear corner posts.

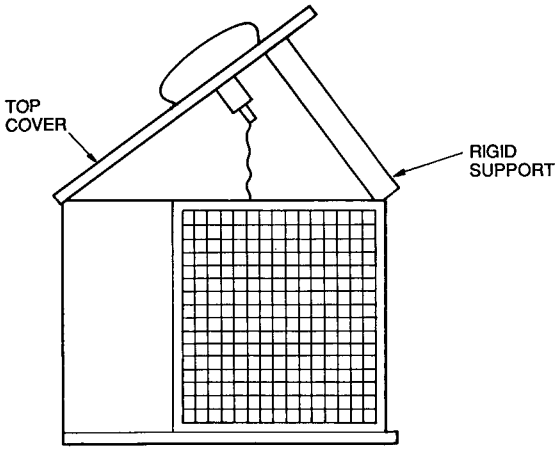


Fig. 10 — Pivot and Support Top Cover

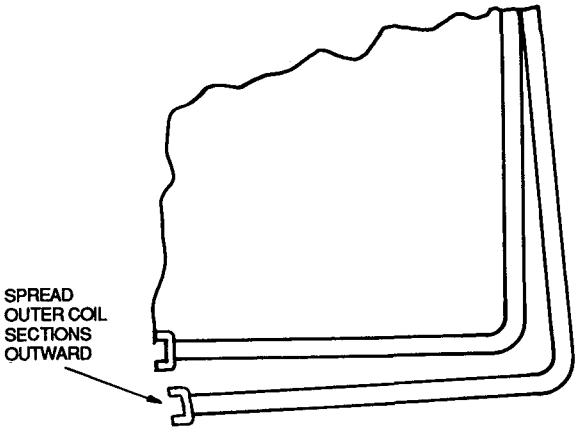


Fig. 11 — Coil Cleaning

TROUBLESHOOTING

PROBLEM	SOLUTION
COMPRESSOR DOES NOT RUN	
Contactor Open	
1. Power off	1. Restore power
2. Fuses blown in field power circuit	2 After finding cause and correcting, replace with correct size fuse.
3. Transformer dead	3. Replace transformer if primary windings are receiving power.
4. Thermostat circuit open	4. Check thermostat setting.
5. Time Guard® II circuit defective	5. Replace Time Guard II circuit.
6. Circuit breaker tripped	6. Check for excessive compressor current draw allowable (140% FLA maximum).
7. Low-pressure switch open	7. Check for refrigerant undercharge, obstruction of indoor airflow, or whether compressor suction shutoff valve is fully open Make sure liquid line solenoid (if used) is open.
8. High-pressure switch open	8. Check for refrigerant overcharge, obstruction of outdoor airflow, air in system, or whether compressor discharge valve is fully open. Be sure outdoor fan(s) is operating
9. Loose electrical connections	9. Tighten all connections.
10. Compressor stuck	10. See 06D compressor service literature.
11. Compressor motor thermostat open	11. Check for excessive motor temperature.
Contactor Closed	
1. Compressor leads loose	1. Check connections.
2. Motor windings open	2 See 06D compressor service literature.
3. Single phasing	3. Replace blown fuse
COMPRESSOR CYCLES ON HIGH-PRESSURE SWITCH	
Outdoor Fan On	
1. High-pressure switch faulty	1 Replace switch.
2. Airflow restricted	2 Remove obstruction.
3. Air recirculating	3. Clear airflow area.
4. Noncondensables in system	4 Purge and recharge as required.
5. Refrigerant overcharge	5. Purge as required
6. Line voltage incorrect	6. Consult power company
7. Refrigerant system restrictions	7. Check or replace filter drier, expansion valve, etc.
Outdoor Fan Off	
1. Fan slips on shaft	1 Tighten fan hub setscrews.
2. Motor not running	2. Check power and capacitor.
3. Motor bearings stuck	3. Replace bearings
4. Motor overload open	4. Check overload rating. Check for fan blade obstruction
5. Motor burned out	5. Replace motor.
COMPRESSOR CYCLES ON LOW-PRESSURE SWITCH	
Indoor-Air Fan Running	
1. Filter drier plugged	1. Replace filter drier.
2. Expansion valve power head defective	2. Replace power head.
3. Low refrigerant charge	3 Add charge. Check low-pressure switch setting
Airflow Restricted	
1. Coil iced up	1. Check refrigerant charge
2. Coil dirty	2. Clean coil fins.
3. Air filters dirty	3. Clean or replace filters.
4. Dampers closed	4 Check damper operation and position.
Indoor-Air Fan Stopped	
1. Electrical connections loose	1 Tighten all connections.
2. Fan relay defective	2. Replace relay.
3. Motor overload open	3. Power supply
4. Motor defective	4. Replace motor.
5. Fan belt broken or slipping	5. Replace or tighten belt

TROUBLESHOOTING (cont)

PROBLEM	SOLUTION
COMPRESSOR RUNNING BUT COOLING INSUFFICIENT	
Suction Pressure Low	
1. Refrigerant charge low	1. Add refrigerant
2. Head pressure low	2. Check refrigerant charge. Check outdoor-air fan thermostat settings.
3. Air filters dirty	3 Clean or replace filters.
4. Expansion valve power head defective	4. Replace power head.
5. Indoor coil partially iced	5. Check low-pressure setting.
6. Indoor airflow restricted	6. Remove obstruction.
Suction Pressure High	
1. Compressor valve defective	1. See 06D compressor service literature.
2. Head load excessive	2 Check for open doors or windows in vicinity of fan coil.
UNIT OPERATES TOO LONG OR CONTINUOUSLY	
1. Low refrigerant charge	1. Add refrigerant.
2. Control contacts fused	2. Replace control.
3. Air in system	3. Purge and evacuate system.
4. Partially plugged expansion valve or filter drier	4. Clean or replace.
SYSTEM IS NOISY	
1. Piping vibration	1. Support piping as required.
2. Compressor noisy	2. Check valve plates for valve noise Replace compressor if bearings are worn
COMPRESSOR LOSES OIL	
1. Leak in system	1. Repair leak.
2. Crankcase heaters not energized during shutdown	2. Check wiring and relays Check heater and replace if defective.
3. Improper interconnecting piping design	3 Check piping for oil return. Replace if necessary.
FROSTED SUCTION LINE	
1. Expansion valve admitting excess refrigerant	1. Adjust expansion valve.
HOT LIQUID LINE	
1. Shortage of refrigerant due to leak	1. Repair leak and recharge.
2. Expansion valve opens too wide	2. Adjust expansion valve.
FROSTED LIQUID LINE	
1. Restricted filter drier	1. Remove restriction or replace.
COMPRESSOR WILL NOT UNLOAD	
1. Defective unloader	1 Replace unloader.
2. Defective capacity control solenoid valve (if used)	2 Replace valve.
3. Miswired capacity control liquid line solenoid (if used)	3 Rewire correctly.
4. Weak, broken, or wrong valve body spring	4. Replace spring
COMPRESSOR WILL NOT LOAD	
1. Miswired capacity control liquid line solenoid (if used)	1. Rewire correctly.
2. Defective capacity control solenoid valve (if used)	2. Replace valve.
3. Plugged strainer (high side)	3 Clean or replace strainer.
4. Stuck or damaged unloader piston or piston ring(s)	4 Clean or replace the necessary parts