

A.R.A. ROOF MOUNT AIR CONDITIONER INSTALLATION and OPERATING INSTRUCTIONS

MODELS

53206-065

53210-064

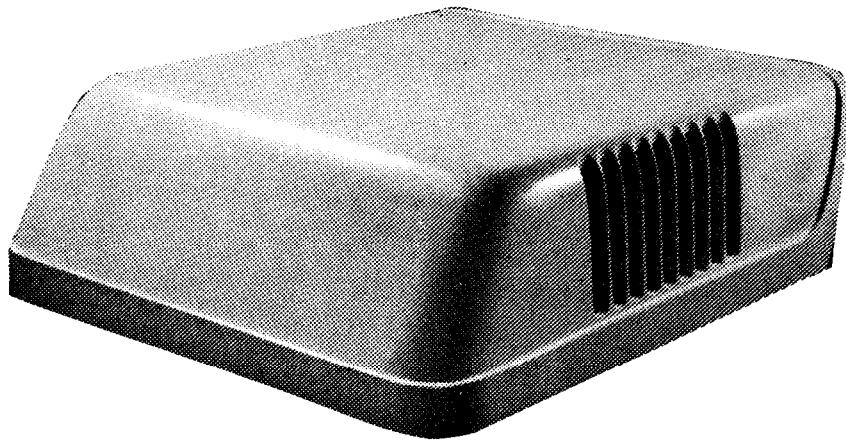
53210-065

53210-066

53210-162

53210-165

53210-166



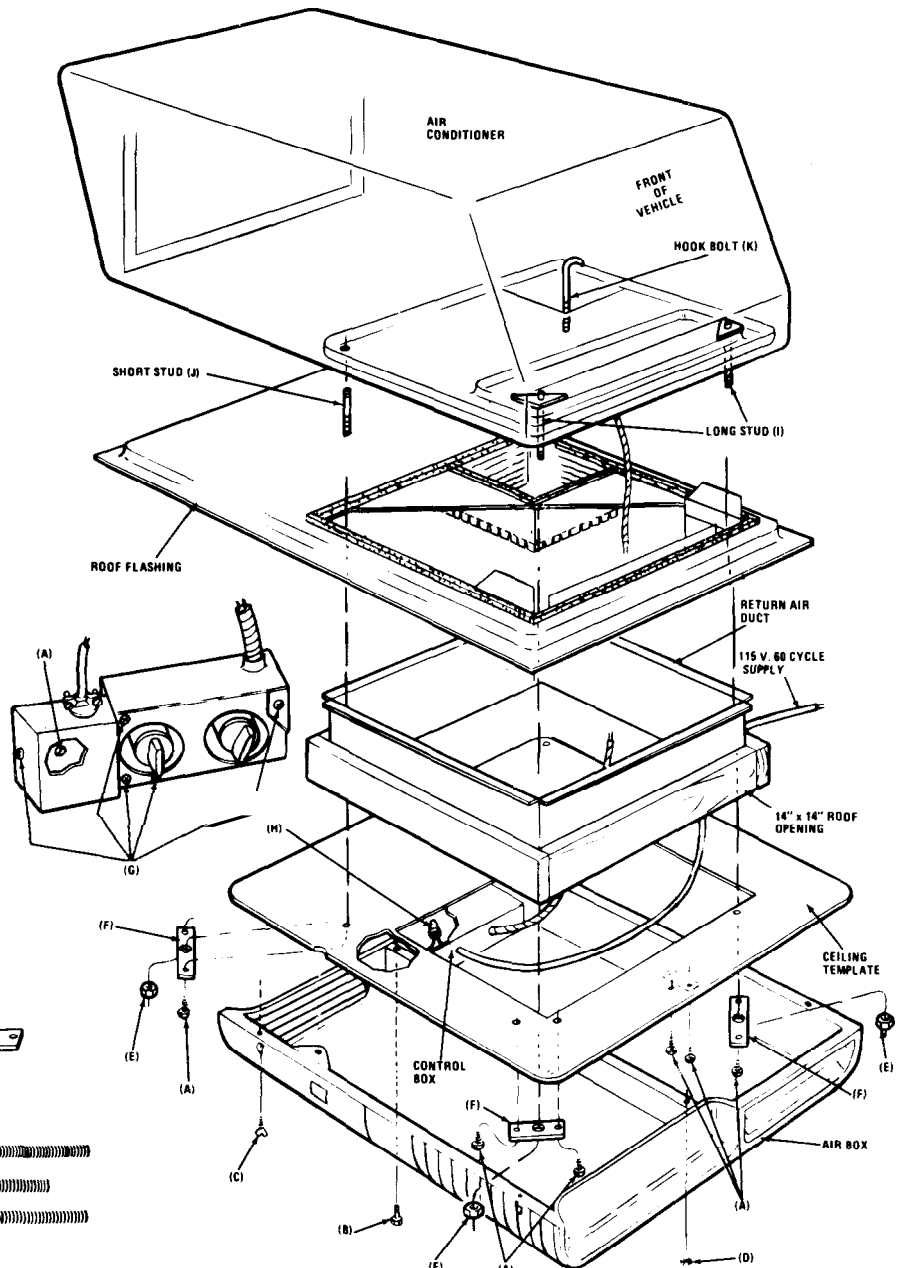
SPECIFICATIONS

	Models 53206965	Models 53210-162 53210-165,53210-166	Models 5321 O-064 53210-065,53210-066
BTU	6,000	10,000	10,000
	115	115	115
Kilowatts	1.1	1.4	1.4
Run. Amps	10	12	12
Total Locked Rotor Amps	40.98	54.48	52.48
Wire Size	Up to 15' No. 14 AWG.		Up to 24' No. 12 AWG.
Min. Generator	2,900 Watt.	2,400 Watt	2,400 Watt
Fuse Size	- 15Amp. Max. -		
Refrigerant Charge (Freon 22)	14.5 oz.	27.5 oz.	25.5 oz.
Max. Roof Thickness	6"	6"	6"
Min. Roof Thickness	1"	1"	1"

NOTE: The anchor bolts, supplied as standard equipment, will cover a range of 2-3/4" to 4-1/8" roof thickness. For roof thicknesses, other than the standard, special Bolt Kits can be obtained by special order. For roof sections thinner than the standard, bolts can be cut off, however, care must be taken so that threads are not damaged. Bolt Kits are available as follows:

KIT PART NO.	ROOF THICKNESS RANGE
3-10142 (std.)	2-3/4" to 4-1/8"
3-10142-1 (opt.)	1" to 2-3/8"
3-10142-2 (opt.)	3-13/16" to 5-1/4"
3-10142-3 (opt.)	5-1/4" to 6-5/8"

INSTALLATION LAYOUT



MOUNTING PARTS

	TOTAL NO.	
(A) Screw	13	
(B) Screw	1	
(C) Screw (Round Head) Chrome Plated	4	
(D) Hex Nut	2	
(E) Nut & Lockwasher	4	
(F) Metal Plates	4	
(G) Self Taping Screw (Blunt point)	5	
(H) Wire Connector	2	
(I) Anchor Bolt (Long)	2	
(J) Anchor Bolt (Short)	1	
(K) Anchor Bolt (Hook)	1	

INSTALLATION

1. Remove the 14" x 14" roof vent and inside trim. If opening has to be cut, frame in to 14" x 14". Be sure framing stock is the same thickness as roof.

Install the return air duct, which will be folded flat when received. Unfold, form it into a square, and bend over tabs as shown in Figure 2. Place duct down through opening, with tabs on top. Cut corners of duct with knife or scissors, for the particular roof thickness, and bend excess up against ceiling.

It is suggested in some applications, where the roof structure does not provide adequate support, that 1/4" plywood be placed around outer edges of vent opening, (under the metal roofing). See Figure 2.

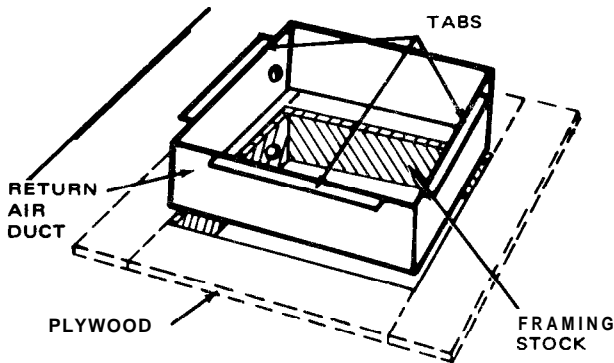


FIGURE 2

2. Run power line to vent or roof opening. If vent fan was removed, the existing wire may be used, providing it complies with the U.S.A. Standard Section A-I 19-1 or any revisions thereof and the N.E.A. Codes.

The power line should be a separate circuit with a fuse box using 15 amp. maximum. The wire size for supply line should be No. 14 AWG with ground for runs up to 15', and No. 12 AWG with ground for runs up to 24'.

3. Peel off the protective wax paper from the adhesive on bottom of roof flashing. See Figure 3.

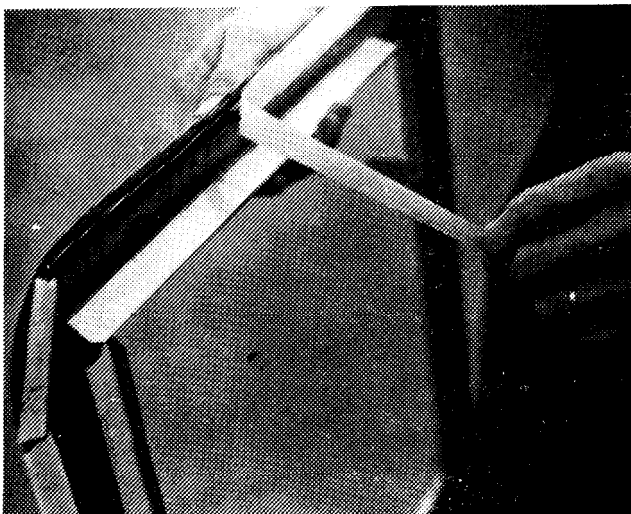


FIGURE 3

4. Place roof flashing, with the marking "REAR", (towards rear of vehicle). Be sure flashing is positioned properly. See Figure 4. Press down on outer edges of flashing to ensure proper seal on roof.

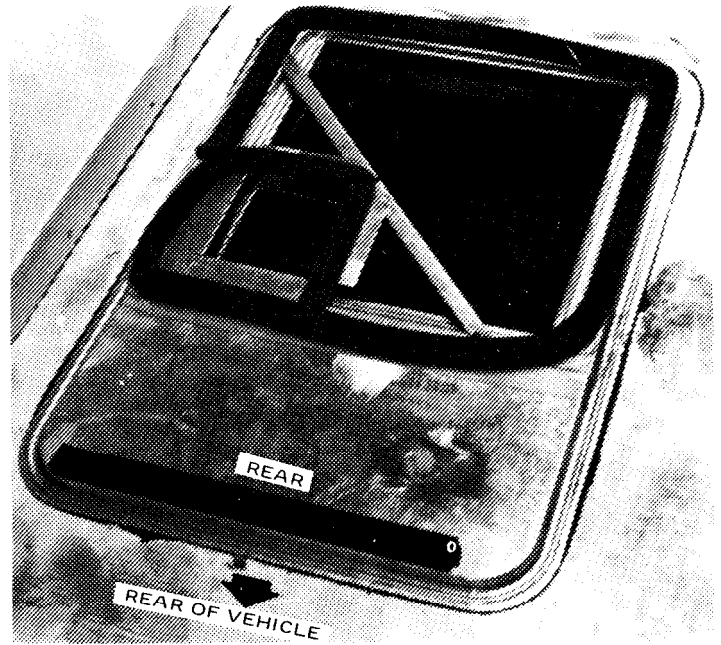


FIGURE 4

5. Set air conditioner on roof flashing, using the guide panels to align return air section on unit with the corresponding opening in roof flashing. **CAUTION: Do not damage the foam tape sealer on top of roof flashing.** Figure 5.



FIGURE 5

6. Install the three straight anchor bolts (I) and (J) as shown. The two long bolts (I) are installed to the front of unit and the short one (J) to the rear. See Figure 6.

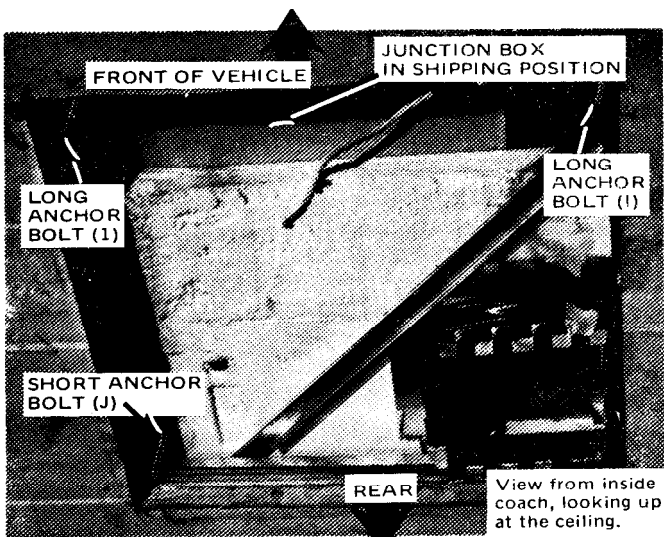


FIGURE 6

Remove the cardboard carton containing the junction box as shown. Leave the junction hanging until ceiling template has been installed.

- Place ceiling template in position and secure to ceiling with the four screws (A) provided. Be sure anchor bolts protrude through the ceiling template. Figure 7.

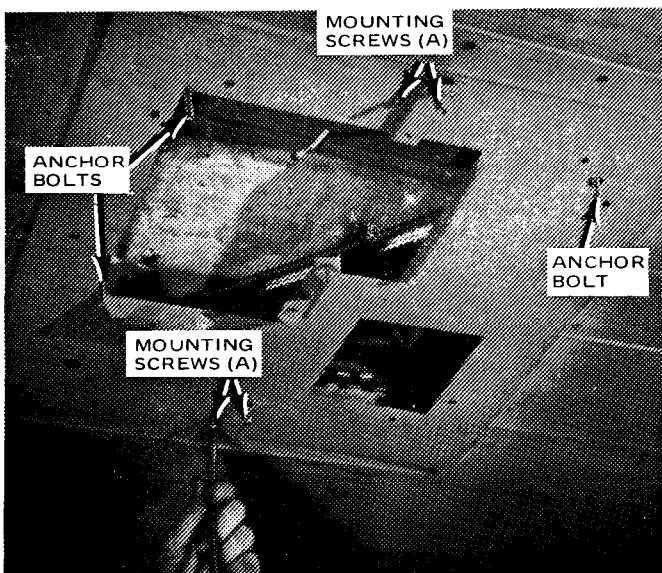


FIGURE 7

- Remove shipping tape and pull flexible duct down. Connect duct to ceiling template by bending over the tabs as shown. Figure 8.

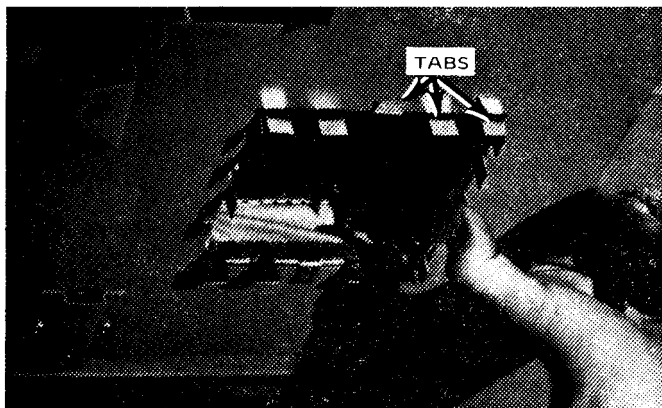


FIGURE 8

- Fasten junction box to the ceiling template with the three screws provided as shown. *Note: TWO of these must be the blunt point screws (G) and the third is (A).*

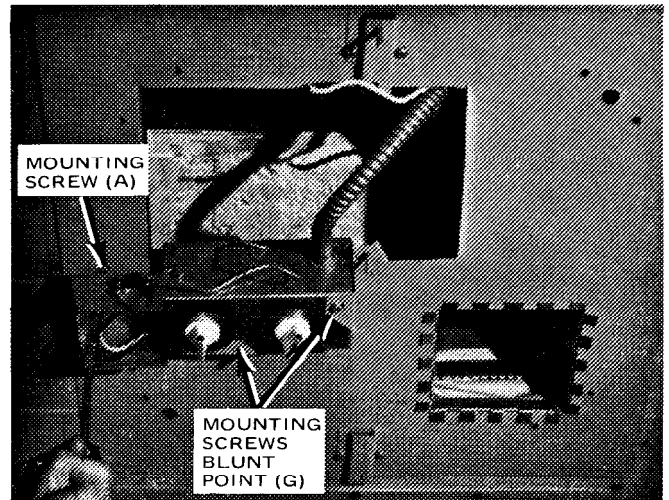


FIGURE 9

- Connect the 115 volt, 60 cycle supply. Figure 10.

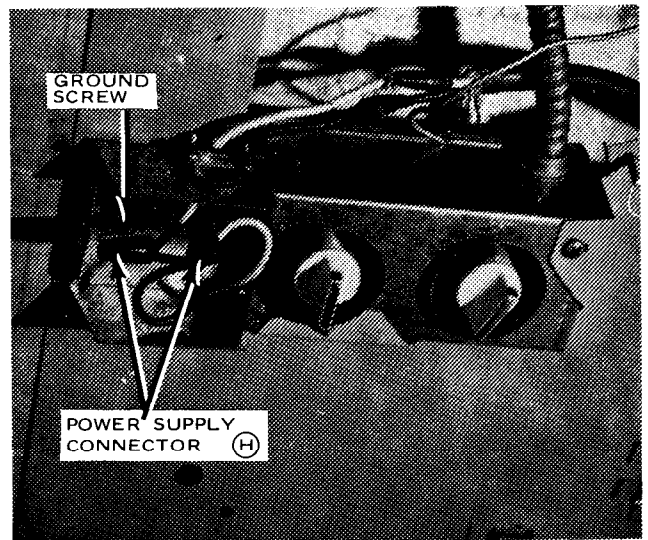


FIGURE 10

As mentioned previously all wiring must comply with the American National Standards Institute; National Electric Codes and all local codes. For wiring diagrams, see page 6.

- Connect white wire in junction box to the white or neutral wire from power supply, as shown.
 - Connect black wire in junction box to the black or hot wire from power supply, as shown.
 - Connect the ground wire from power supply to the identified ground screw in junction box, as shown.
- Secure the air conditioner with the four anchor bolts, nuts, plates and screws provided. Figure 11. Anchor bolts should be tightened evenly to insure the proper seal on roof. Install junction box cover. Figure 11. Place thermobulb in the bracket provided. Figure 11A.

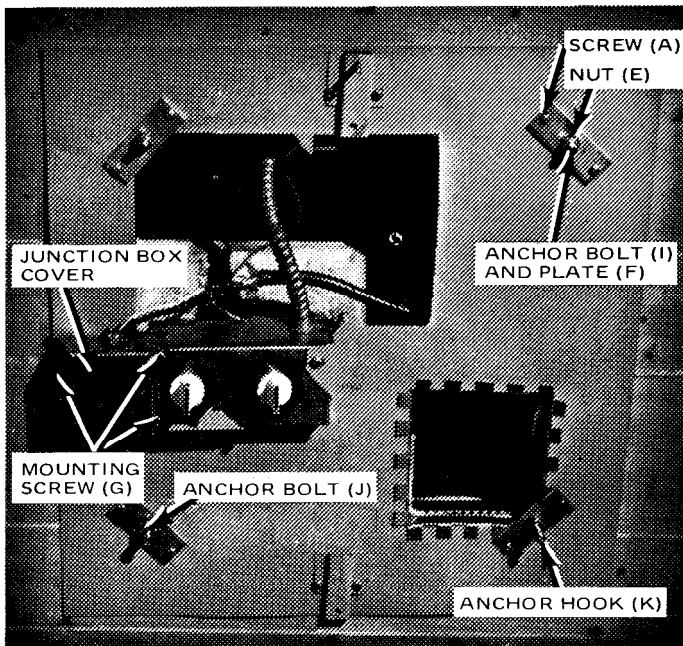


FIGURE 11

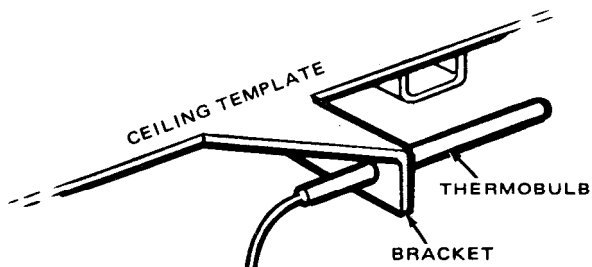


FIGURE 11A

12. Remove the return air grille and fasten air box to ceiling template and ceiling as shown. When air box is installed, place cover plate over the exterior mounting hole.

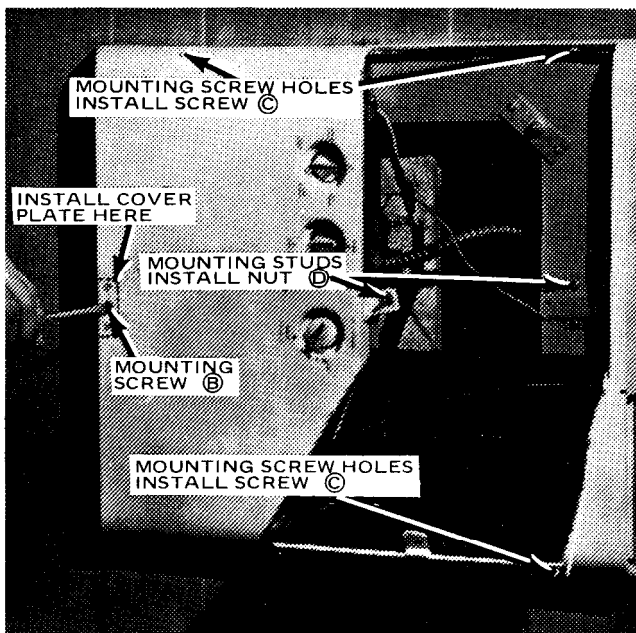


FIGURE 12

13. Reinstall the return air grille and turn on power supply.

OPERATING INSTRUCTIONS

1. Set thermostat dial to desired temperature.
2. Place blower switch in desired position.

Hi-Fan.	High Speed Fan Only
Med. Fan	Med. Speed Fan Only
Low-Fan	Low Speed Fan Only
Hi-Cool.	High Speed Fan with Cooling
Med. Cool.	Med. Speed Fan with Cooling
Low-cool	Low Speed Fan with Cooling
3. Adjust air flow for the desired air distribution.
4. Adjust louvers on air box for the best air distribution.
5. To completely shut down unit, place blower switch in the "OFF" position.

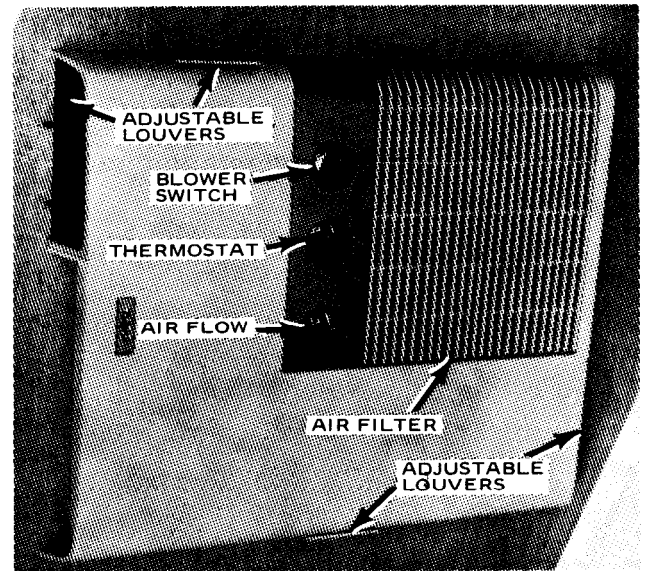


FIGURE 13

MAINTENANCE

NO TE: Models 532 1 0-064, 532 1 0-066, 532 10- 1 62 and 53210- 166 have a delayed start kit installed. When unit is turned on, the fan will start, and in approximately (2) minutes the compressor will start. After shut down, unit will not restart for approximately (2) minutes.

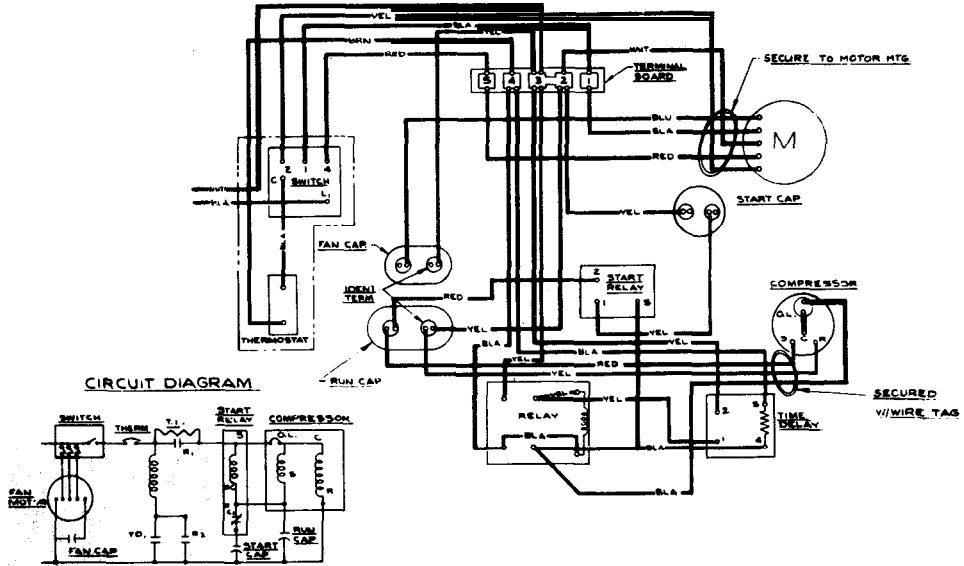
NO TE: Models 53206-065, 53210-065 and 532 10- 165 do not have delayed start kits installed. When unit is turned on, the fan and compressor start at the same time. After shut down, wait 4 to 5 minutes before restarting unit.

AIR FILTER

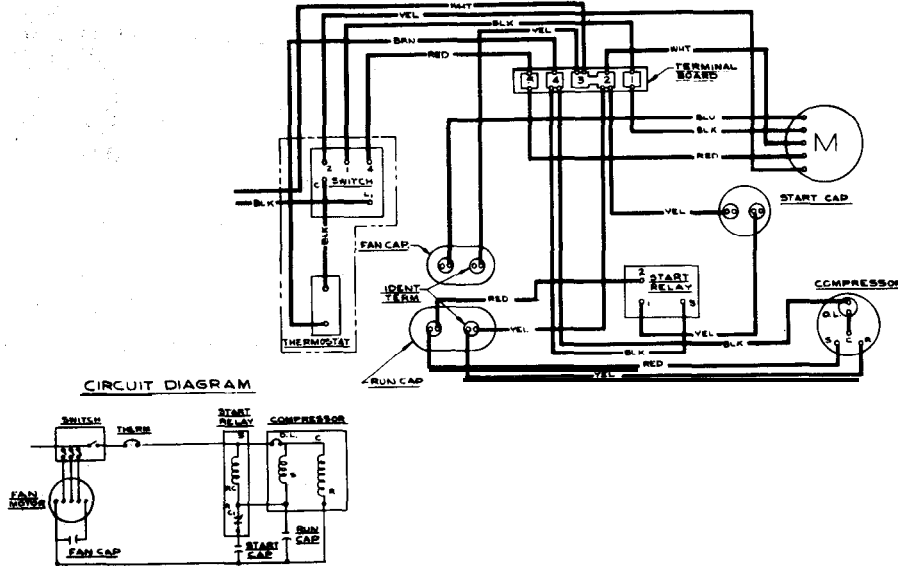
The air filter should be cleaned or replaced periodically. Filter may be washed in warm suds water, let dry and reinstalled. Replacement filters are available from nearest A.R.A. Dealer. Part No. 3-8166.

WIRING DIAGRAM

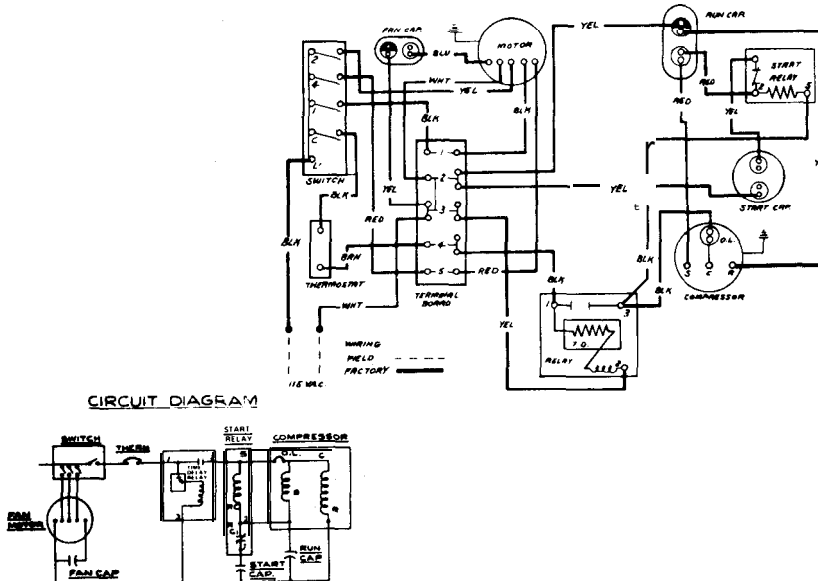
MODELS 53210-064, 53210-162



MODELS 53206-065, 53210-065, 53210-165



MODELS 53210-066, 53210-166

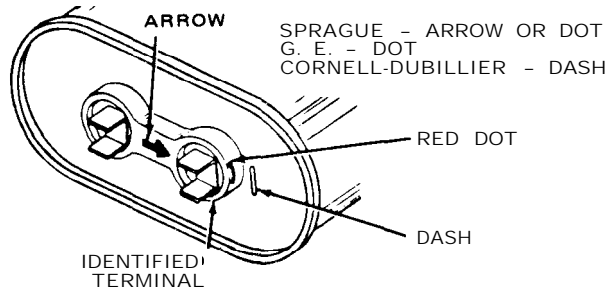


SERVICE INFORMATION

THE IMPORTANCE OF CORRECT CONNECTIONS FOR RUN CAPACITORS

The terminal connected to the outer foil (nearest the can) is the one most likely to short to the can and be grounded in the event of a capacitor breakdown. This terminal is identified by some sort of marking.

The identified terminal should always be connected to the supply line or "R" terminal **NEVER** to the "S" terminal.



When connected in this manner a shorted and grounded running capacitor will result in a direct short to ground from the "R" terminal and will blow line fuse No. 1. The motor protector will protect the main wiring from excessive temperature.

If, however, the shorted and grounded terminal is connected to the start winding terminal "S", current will flow from the supply line through the main winding and through the start winding to ground. Even though the protector may trip, current will continue to flow through the start winding to ground, resulting in a continuing temperature rise and failure of the start winding.

INSTRUCTIONS FOR CHANGING BLOWER MOTOR

1. Disconnect power supply.
2. Remove outer shroud.
3. Remove evaporator shroud. (The mounting screws are under the fibre glass insulation.) See Illustration A.

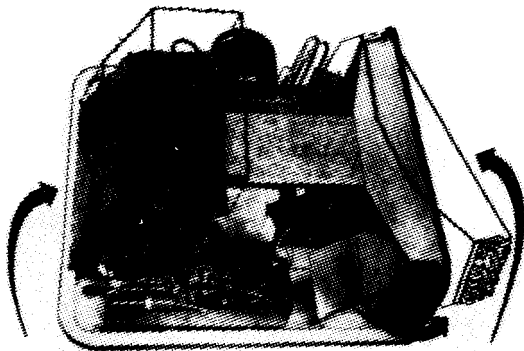


ILLUSTRATION A

ILLUSTRATION B

4. Remove the 4 screws holding condenser coil in place and swing coil out. CARE SHOULD BE TAKEN SO AS NOT TO DAMAGE TUBING CONNECTED TO COIL. See Illustration B.

5. Loosen allen screws that hold fan blade and blower wheel on motor shaft.
6. Disconnect motor wires in control box.
7. Remove the 4 motor mounting nuts and remove motor.
8. Install new motor. When reinstalling fan blade, be sure it is installed for the proper rotation. Fan turns clockwise. (Clockwise facing front of unit.) See Illustration C.

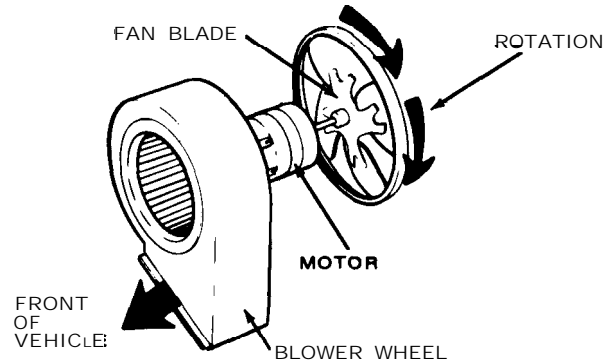
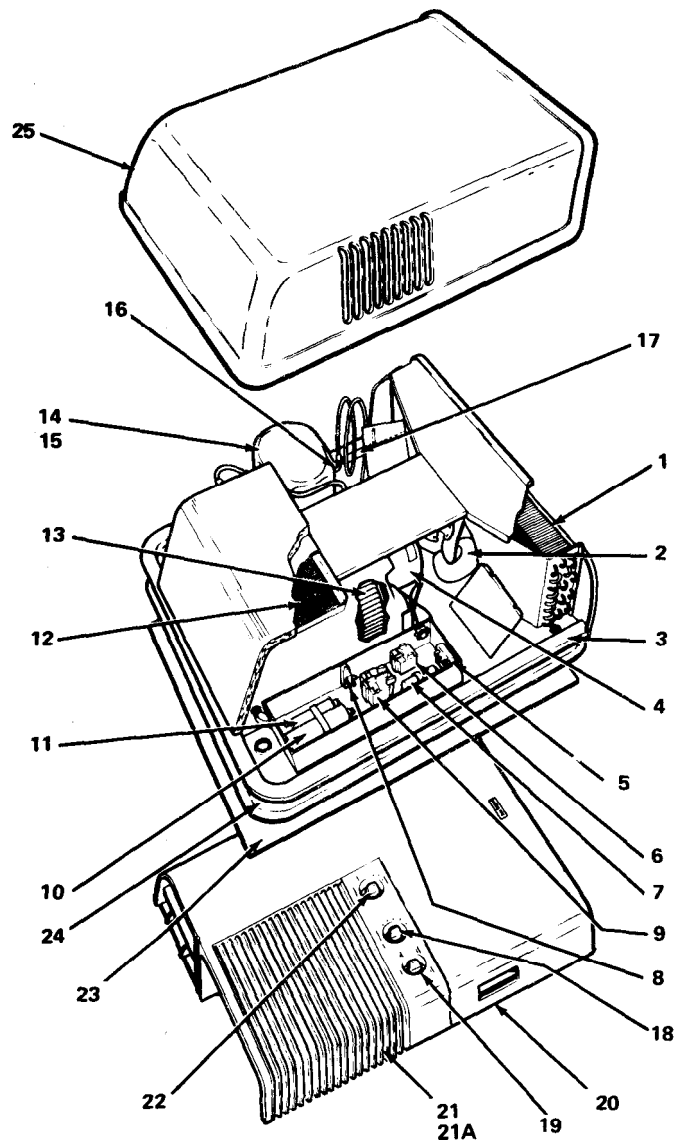


ILLUSTRATION C

COMPRESSOR CHANGE OUT AND CHARGE PROCEDURE

In the event a leak is found or compressor has to be replaced and it becomes necessary to recharge system, proceed as follows:

1. Disconnect power to the unit.
2. Repair leak and/or replace compressor.
3. Install an 8 cu. inch filter-drier in the suction line. If compressor was burned out, replace the existing liquid line drier with Part No. 3-8022. (CHECK DIRECTION OF FLOW AS NOTED ON DRIER.)
4. Install, solder in type, charging ports, in both the liquid and suction lines. DUO-THERM DOES NOT RECOGNIZE THE USE OF PIERCING TYPE, CLAMP ON SERVICE VALVES.
5. Attach charging hoses to charge ports on liquid and suction lines. Hoses must have valve depressors, such as a Superior, No. 895, to depress valves in charge ports.
6. Evacuate system to 29" vacuum and continue to evacuate for 15 minutes.
7. Break vacuum to 100 pounds pressure with R22 and and leak test.
8. Evacuate again to 29" and hold for 45 minutes,
9. Charge system with R22 as shown on chart on Page 1. (Always purge charging hoses before connecting to unit to charge.)
10. If compressor was replaced due to a burn out, allow unit to run for several hours, then check the pressure drop thru the suction line filter. A five pound drop indicates filter is full of contaminates and needs to be replaced.



PARTS LIST

Index Number	Description	53206-065	53210454	53210465	53210-066	53210-162	53210-165	53210-166
1	Condenser Coil	H-7957	H-7921	H-7921	H-7921	H-7921	H-7921	H-7921
2	Fan Blade	H-7929	H-7929	H-7929	H-7929	H-7929	H-7929	H-7929
3	Base Pan	3-8466	3-8466	3-8466	38466	3-8466	3-8466	3-8466
4	Motor	3-9649	3-9648	3-9648	39648	3-9648	3-9648	3-9648
5	Time Delay Relay	- - - -	3-8051	- - - -	310456	3-8051	- - - -	3-1 0456
6	Start Relay	H-5040-7	H-5040-7	H-5040-7	H-5040-7	H-5040-6	H-5040-6	H-5040-6
7	Start Capacitor	H-5046-2	H-5046-2	H-5046-2	H-5046-2	H-5046-10	H-5046-10	H-5046-1 0
8	Terminal Block	3-8024	3-8024	3-8024	38024	3-8024	3-8024	38024
9	Line Contactor	- - - -	H-7948	- - - -	- - - -	H-7946	- - - -	- - - -
10	Run Capacitor	3-8087-4	3-8067-6	3-8187-6	3-8087-6	3-8087-6	3-8087-6	3-8087-6
11	Fan Capacitor	3-6087-1	3-8087-3	3-8087-3	3-8087-3	3-8087-3	3-8067-3	3-8087-3
12	Evap. Coil	H-7923	H-7922	H-7922	H-7922	H-7922	H-7922	H-7922
13	Blower Wheel	3-8023	H-7930	H-7930	H-7930	H-7930	H-7930	H-7930
14	Compressor	3-8183	3-8184	3-8184	38184	H-7885.1	H-7885-1	H-7885-1
15	Overload	- - - -	- - - -	- - - -	- - - -	H-7886.2	H-7886-2	H-7886-2
16	Cap. Tubes	tt 3-8102	tt 3-8030	tt 3-8030	tt 3-8030	tt 3-8030	tt 3-8030	tt 3-8030
17	Drier	3-8022	3-8022	38022	3-8022	3-8022	3-8022	38022
18	Thermostat	H-4825	H-4825	H-4825	H-4825	H-4825	H-4825	H-4825
19	Blower Switch	3-9610	3-9610	39610	39610	3-9610	39610	3-9610
20	Air Box Assembly	3-9684	39684	3-9684	370141	39684	39684	3-10141
21	Filter	3-8 166	3-8166	3-8166	38166	3-8166	3-8166	38166
21A	Filter Grille	3-8064	3-8054	3-8054	38054	3-8054	3-8054	3-8054
22	Knob	3-8151	3-8151	3-8151	3-8151	38151	3-8151	3-8151
23	Ceiling Template	3-8169	3-8169	3-8169	38169	3-8169	3-8169	38169
24	Roof Flashing	3-8 174	3-8174	3-8174	3-8178	3-8174	3-8174	3-8178
	'Anchor Bolt (Hook)	3-8 174-l	3-8 174-l	3-8174-1	3-8174-l	3-8174-1	3-8174-1	38174-l
	'Anchor Bolt (Long-Stud)	3-8173-l	3-8173-l	3-8173-l	38173-l	3-8 173-l	3-8173-l	38173-l
	'Anchor Bolt (Short-Stud)	H-6689	H-6689	H-6689	H-6689	H-6689	H-6689	H-6689
25	Shroud	H-7960	H-7960	W-7960	H-7960	H-7960	H-7960	H-7960

*These bolts are supplied as standard equipment, under Kit No. 3-10142 for roof thicknesses of 2-3/4" to 4-1/8"

Optional Bolt Kits are available as follows:

- 3-10142-1 Covers 1" to 2-3/8" Roof Thickness.
- 3-10142-2 Covers 3-13/16" to 5-1/4" Roof Thickness.
- 3-10142-3 Covers 5-1/4" to 6-5/8" Roof Thickness.

t 1 Cap Tube Required.
tt 2 Cap Tubes Required.