



RECORD THIS UNIT INFORMATION FOR
FUTURE REFERENCE:
Model Number _____
Serial Number _____
Date Purchased _____

MODEL 6403 Series
Roof-Top Air Conditioner
used with
Analog Control Kit
3107541.009 Cool/Furnace
and
3107561 Air Distribution Box

USA
SERVICE OFFICE
Dometic, LLC
2320 Industrial Parkway
Elkhart, IN 46516
574-294-2511

CANADA
Dometic, LLC
46 Zatonski, Unit 3
Brantford, ON N3T 5L8
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519-720-9578

For Service Center
Assistance Call:
800-544-4881



**This Unit Is Designed For OEM Installation. All Initial
Installations Must Be Approved By Dometic, LLC**

! WARNING

This manual must be read and understood before installation, adjustment, service, or maintenance is performed. This unit must be installed by a qualified service technician. Modification of this product can be extremely hazardous and could result in personal injury or property damage.

! AVERTISSEMENT

Lire et comprendre ce manuel avant de procéder à l'installation, à des réglages, de l'entretien ou des réparations. L'installation de cet appareil doit être effectuée par un réparateur qualifié. Toute modification de cet appareil peut être extrêmement dangereuse et entraîner des blessures ou dommages matériels.

**INSTALLATION
INSTRUCTIONS**

Models

640312.301
640315.301
640315.306

3312114.000

Form No. 3312114.000 10/08
(French 3312115.000)
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LaGrange, IN 46761

Important: These Instructions
must stay with unit.
Owner read carefully.

SAFETY INSTRUCTIONS

This manual has safety information and instructions to help users eliminate or reduce the risk of accidents and injuries.

RECOGNIZE SAFETY INFORMATION



This is the safety-alert symbol. When you see this symbol in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating instructions.

UNDERSTAND SIGNAL WORDS

A signal word, WARNING OR CAUTION is used with the safety-alert symbol. They give the level of risk for potential injury.

⚠ WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

CAUTION used without the safety alert symbol indicates, a potentially hazardous situation which, if not avoided may result in property damage.

Read and follow all safety information and instructions.

GENERAL INFORMATION

- A.** Product features or specifications as described or illustrated are subject to change without notice.
- B.** This "Air Conditioner" (hereinafter referred to as the "unit") Is Designed For:
 1. Installation on a recreational vehicle during the time the vehicle is manufactured.
 2. Mounting on the roof of a recreational vehicle.
 3. Roof construction with rafters/joists on minimum of 16 inch centers.
 4. Minimum of 2.00 inches and maximum of 4.00 inches distance between roof to ceiling of recreational vehicle. Alternate installation methods will allow for roofs more than 4.00 inches thick.
- C.** The ability of the unit to maintain the desired inside temperature depends on the heat gain of the RV. Some preventative measures taken by the occupants of the RV can reduce the heat gain and improve the performance of the unit. During extremely high outdoor temperatures, the heat gain of the vehicle may be reduced by:
 1. Parking the RV in a shaded area.
 2. Using window shades (blinds and/or curtains).
 3. Keeping windows and doors shut or minimizing usage.
 4. Avoiding the use of heat producing appliances.
 5. Operation on High Fan/Cooling mode will give optimum or maximum efficiency in high humidity or high outside temperatures.
 6. Starting the unit early in the morning and giving it a "head start" on the expected high outdoor ambient will greatly improve its ability to maintain the desired indoor temperature.
 7. For a more permanent solution to high heat gain, accessories like A&E outdoor patio and window awnings will reduce heat gain by removing the direct sun. They also add a nice area to enjoy company during the cool of the evening.

D. Condensation

Note: The manufacturer of this unit will not be responsible for damage caused by condensed moisture on ceilings or other surfaces. Air contains moisture and this moisture tends to condense on cold surfaces. When air enters the RV, condensed moisture may appear on the ceiling, windows, metal parts, etc. The unit removes this moisture from the air during normal operation. Keeping doors and windows closed when this unit is in operation will minimize condensed moisture on cold surfaces.

SPECIFICATIONS											
Model Number	Nominal Capacity (BTU/HR) Cooling	Electrical Rating Amps	Compressor Rated Load Amps	Compressor Locked Rotor Amps	Fan Motor Rated Load Amps	Fan Motor Locked Rotor Amps	Refrigerant R-410A (Oz.)	Minimum Wire Size*	AC Circuit Protection *** User Supplied	Installed Weight (Pounds)	Minimum Generator Size** 1 Unit/2 Units
640312.301	11,000	120VAC 60Hz. 1 Phase	11.0	53.0	3.5	10.0	19.0	12 AWG Copper Up To 24'	20 Amp	95	2.5 KW / 4.0 KW
640315.301	13,500		12.5	61.0	3.5	10.0	17.5		20 Amp	96	3.5 KW / 5.0 KW
640315.306	13,500		12.5	61.0	3.5	10.0	17.5		20 Amp	97	3.5 KW / 5.0 KW

* For wire length over 24 ft., consult the National Electric Code for proper sizing.

** Dometic, LLC gives **GENERAL** guidelines for generator requirements. These guidelines come from experiences people have had in actual applications. When sizing the generator, the total power usage of your recreational vehicle must be considered. Keep in mind generators lose power at high altitudes and from lack of maintenance.

*** **CIRCUIT PROTECTION:** Time Delay Fuse or HACR Circuit Breakers Required.

INSTALLATION INSTRUCTIONS

A. Precautions

⚠ WARNING

Improper installation may damage equipment, could endanger life, cause serious injury and/or property damage.

1. Read Installation and Operating Instructions carefully before attempting to start your unit installation.
2. Dometic, LLC will not be liable for any damages or injury incurred due to failure in following these instructions.
3. Installation must comply with the National Electrical Code ANSI/NFPA-70 and CSA Standard C22.1 (latest edition and any State or Local Codes or regulations).
4. **DONOT** add any devices or accessories to this unit except those specifically authorized by Dometic.
5. This equipment must be serviced by qualified personnel and some states require these people to be licensed.

B. Choosing Proper Location For The Unit

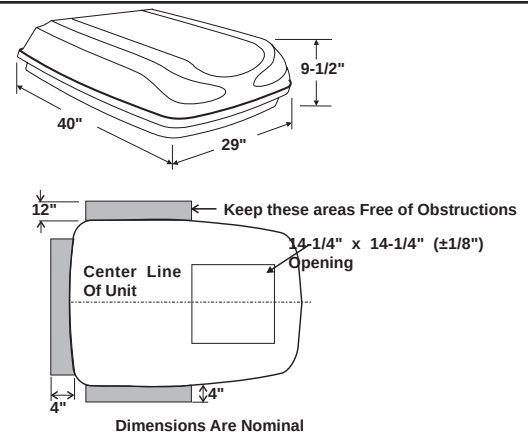
This unit is specifically designed for installation on the roof of a recreational vehicle (RV). When determining your cooling requirements, the following should be considered:

- Size of RV;
- Window area (increases heat gain);
- Amount of insulation in walls and roof;
- Geographical location where the RV will be used;
- Personal comfort level required.
- It is preferred that the unit be installed on a relatively **flat and level** roof section measured with the RV parked on a level surface.

Note: A 8° slant to **either** side, or front to back, is acceptable for all units.

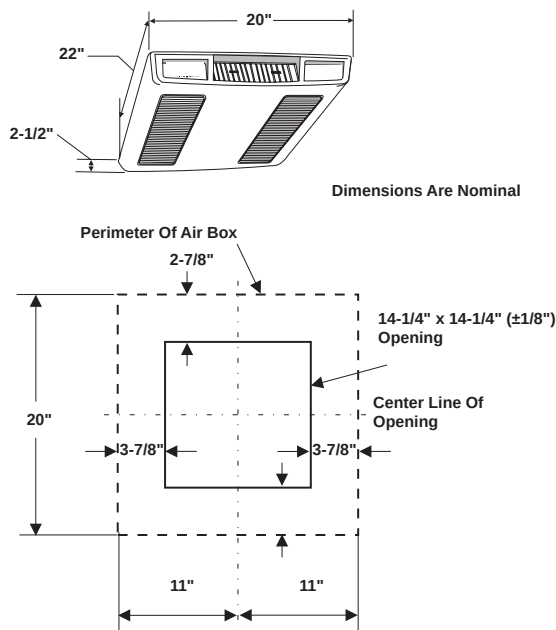
1. For one unit installation: The unit should be mounted slightly forward of center (front to back) and centered from side to side.
2. For two unit installations: Install one Unit 1/3 and one Unit 2/3's from front of RV and centered from side to side.
3. After Location Has Been Selected:
 - a. Check for obstructions in the area where unit will be installed. See FIG. 1.

FIG. 1



- b. The roof must be designed to support 130 pounds when the RV is in motion. Normally a 200 lb. static load design will meet this requirement.
- c. Check inside the RV for return air kit obstructions (i.e. door openings, room dividers, curtains, ceiling fixtures, etc.) See FIG. 2.

FIG. 2



C. Roof Preparation

1. **Opening Requirements:** Before preparing the ceiling opening, the type of system options must be decided. Read all of the following instructions before beginning the installation.
A 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening must be cut through the roof and ceiling of the RV. This opening must be located between the roof reinforcing members.
The 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening is part of the return air system of the Unit and must be finished in accordance with NFPA Standard 501C Section 2.7.2.

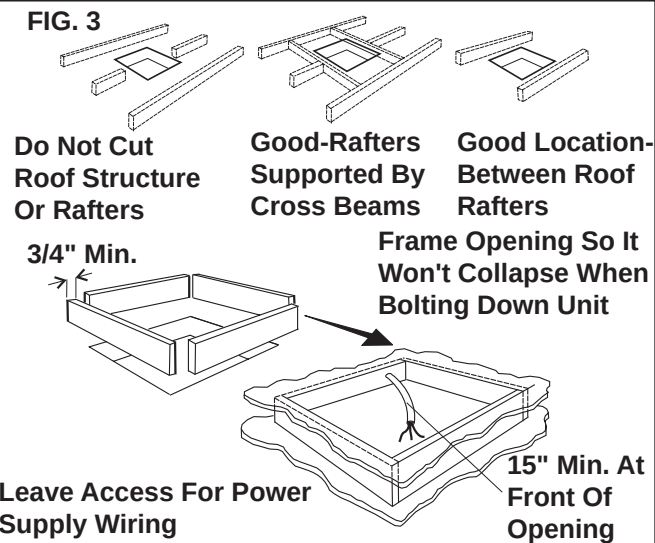
! WARNING

There may be electrical wiring between the roof and the ceiling. Disconnect 120 volt AC power cord and the positive (+) 12 volt DC terminal at the supply battery. Failure to follow this instruction may create a shock hazard causing death or severe personal injury.

2. New Opening:
 - a. Mark a 14-1/4" x 14-1/4" ($\pm 1/8$ ") square on the roof and carefully cut the opening.
 - b. Using the roof opening as a guide, cut the matching hole in the ceiling.

- c. The opening created must be framed to provide adequate support and prevent air from being drawn from the roof cavity. Lumber 3/4" or more in thickness must be used. Remember to provide an entrance hole for power supplies, furnace wiring and a seven-conductor cable, 18 to 22 AWG is to be used for analog thermostat connections. See FIG. 3.

FIG. 3



CAUTION

It is the responsibility of the installer of this unit to ensure structural integrity of the RV roof. Never create a low spot on the roof where water will collect. Water standing around the unit may leak into the interior causing damage to the product and the RV.

D. Wiring Requirements

1. **120 VAC Supply Line**
Route a copper 12 AWG, with ground, 120 VAC supply line from the time delay fuse or circuit breaker box to the roof opening.
 - a. This supply line must be located in the front portion of the 14-1/4" x 14-1/4" (±1/8") opening.
 - b. The power **MUST** be on a separate 20 Amp time delay fuse or HACR circuit breaker.
 - c. Make sure that at least 15" of supply wire extends into the roof opening. This ensures an easy connection at the junction box.
 - d. Wiring must comply with all National, State and Local Wiring Codes.
 - e. Use a steel sleeve and a grommet or equivalent methods to protect the wire where it passes into the opening.
2. **Route a dedicated 12 VDC supply line (18 -22 AWG) from the RV's converter (filtered Terminals) or battery to the roof opening.**
 - a. This supply line must be located in the front portion of the 14-1/4" x 14-1/4" (±1/8") opening.

- b. Make sure that at least 15" of supply wire extends into the roof opening.
3. If a furnace is to be controlled by the system, the two furnace thermostat leads must be routed to the roof opening. Make sure at least 15" of the furnace thermostat wires extend into the roof opening.
4. Route a seven conductor (18 to 22AWG) for analog thermostat connections. Make sure 15" of the wires extends into the roof opening and 6" extend from the wall at the thermostat mounting location. See Section E.

E. Analog Thermostat & Cable Installation

1. Analog Thermostat Location

The proper location of the thermostat is very important to ensure that it will provide a comfortable RV temperature. Observe the following general rules when selecting a location:

- a. Locate the Analog Thermostat 54" above the floor.
- b. Install the Analog Thermostat on a partition, not on an outside wall.
- c. Never expose it to direct heat from lamps, sun or other heat producing items.
- d. Avoid locations close to doors that lead outside, windows or adjoining outside walls.
- e. Avoid locations close to supply registers and the air from them.
- f. A 3/8" diameter hole will be needed to route the seven conductor cable through the wall. See Section D-4

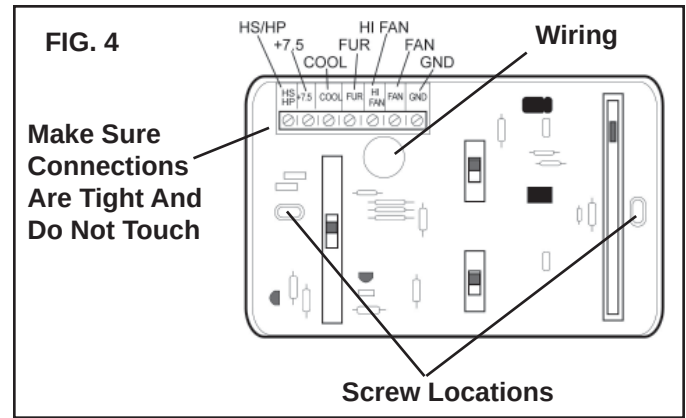
2. Seven Conductor Cable Installation.

- a. A seven-conductor cable, 18 to 22 AWG is to be used for low voltage connections.
- b. Choose the shortest, direct route from the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening to the thermostat location selected.
- c. Consider where screws, nails or staples might contact the cable.
- d. Leave approximately 6" of cable extending through the wall for connection to the thermostat.
- e. Leave approximately 15" of cable extending into the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening for connection at unit.

3. Analog Thermostat Installation.

Note: Wire colors listed for the seven conductor cable are the most common used in the RV Industry. Wire Colors may vary.

Remove the cover from the thermostat by starting at one corner and gently lifting it from the base. Insert the seven conductor cable through the hole in the base assembly. Cut back the outer cable shield 3" and strip 1/4" of insulation from the inner wires. Mount the thermostat level on the wall using the screws provided. See FIG. 4. See Section H, Wiring the unit, Low voltage connections.



F. Placing Unit On The Roof

1. Remove the unit from the carton.

⚠ CAUTION

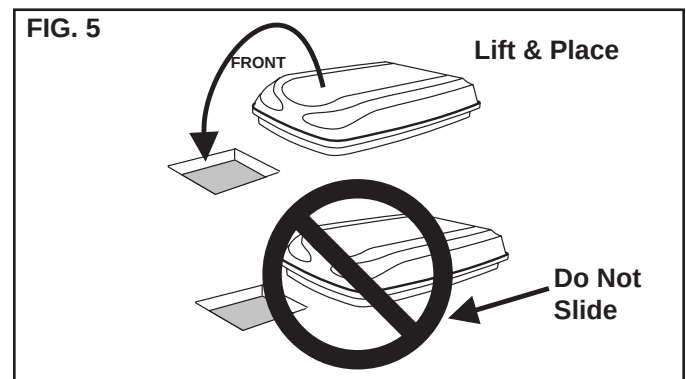
This unit weighs approximately 100 pounds. To prevent back injury, use a mechanical hoist to place Unit on roof.

2. Place the unit on the roof.

CAUTION

Do not slide the unit. This may damage the roof gasket attached to the bottom and may create a leaky installation.

3. Lift and place the unit over the prepared opening using the gasket on the unit as a guide. See FIG. 5.

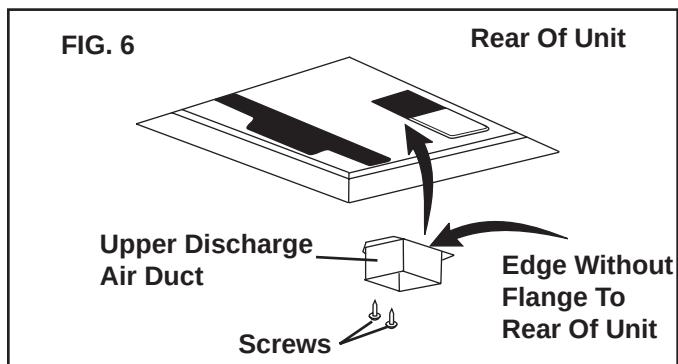


4. Place the 3107561 Air Distribution Box and 3107541 Analog Control Kit inside the RV. These boxes contain mounting hardware for the unit and will be used inside the RV. This completes the outside work. Minor adjustments can be done from the inside of the RV if required.

G. Installing The Unit

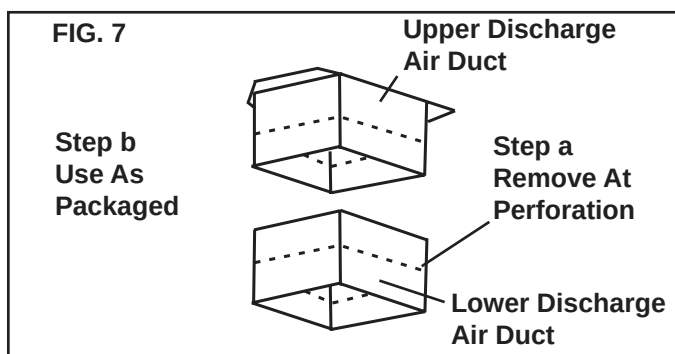
1. Discharge Duct & Ceiling Template Installation
 - a. Remove the air box and mounting hardware from their carton. The upper duct is shipped inside the lower duct which is part of the ceiling template.

2. Check for correct alignment and adjust the unit as necessary (Roof Gasket centers over 14-1/4" $\pm$ 1/8" opening).
3. Remove upper duct from ceiling template and locate it over blower discharge. See FIG. 6.

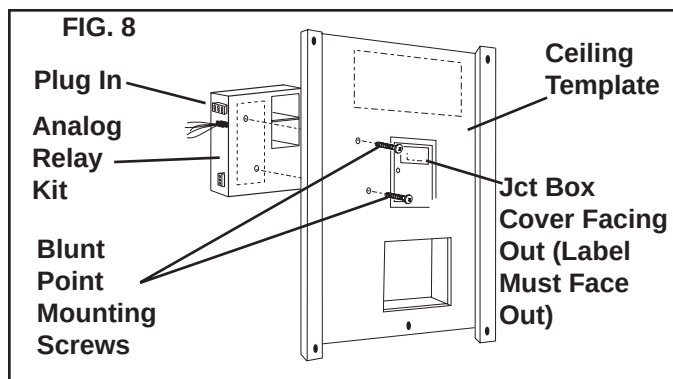


Note: Edge without flange installs toward REAR of opening.

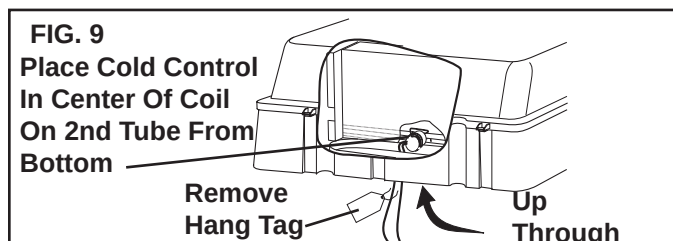
4. Use two (2) sharp pointed #10-16x0.50 sheet metal screws to hold duct to base pan. Screw holes are provided in bottom of base pan for these screws. See FIG. 6.
5. Reach up into return air opening of the unit and pull the unit electrical cord down for later connection.
6. Measure the ceiling to roof thickness:
 - a. If distance is 2"-3", remove perforated tabs from bottom duct only. See FIG. 7.



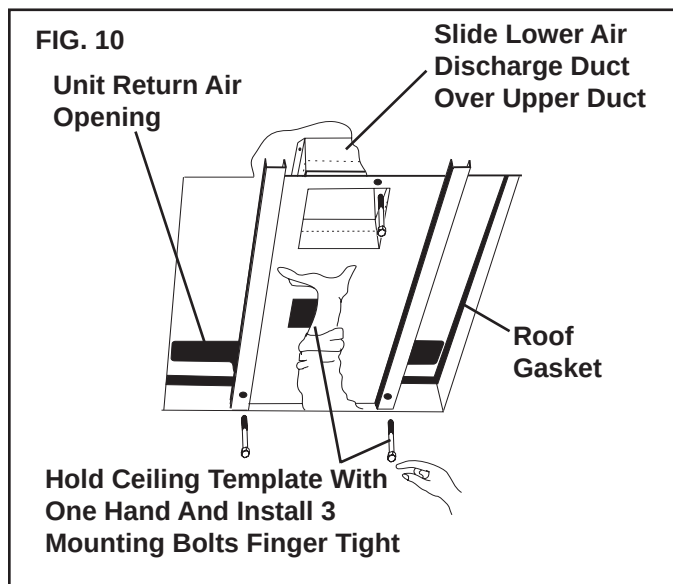
- b. If distance is 3"-4", install ducts as received. See FIG. 7.
 - c. If distance is 4"-6", use optional 318556.000 Duct Adaptor and 3100895.006 Bolt Kit. See FIG. 7.
7. Locate the analog relay kit (3107541) on the ceiling template. Drive two #10 x 3/8 blunt pointed Phillips head screws (provided) through ceiling template into holes in relay kit to hold in place. See FIG. 8.



8. Place the cold control switch up through the base pan and on the second refrigerant tube from the bottom in the center of the evaporator coil. Make sure the spring clip is fastened securely to the tubing and the cold control surface is making contact with aluminum fins on evaporator coil. See FIG. 9.



- a. Keep wires away from heat strip (if applicable) and sharp edges to prevent damaging the wires. Use wire ties if necessary. See FIG. 9.
 - b. Remove installation notice hang tag from freeze control. See FIG. 9.
9. Install ceiling template by sliding lower duct over upper duct. See FIG. 10.



10. Hold the ceiling template with one hand and with the other, install the three 8" x 1/4-20 mounting bolts through the template and into the base pan.

- a. Finger-tighten the bolts and check alignment. There should be an equal opening on each side and the rear flange must be tight against the roof opening.
- b. **EVENLY** tighten the three bolts to a torque of 40 to 50 inch pounds. This will compress the roof gasket to approximately 1/2". The bolts are self locking so over tightening is not necessary.

CAUTION

If bolts are left loose there may not be an adequate roof seal or if over tightened, damage may occur to the unit base or ceiling template. Tighten to torque specifications listed in this manual.

H. Wiring The Unit

Reach up into the return air opening and pull the remaining wires down.

1. Connection Of Low Voltage Wires

CAUTION

Disconnect the positive (+) 12 volt DC terminal at the supply battery. Damage to equipment could occur if the 12 volt DC is not shut off.

Note: Wire colors listed for the seven conductor cable are the most common used in the RV Industry. Wire Colors may vary.

Note: If solar panel is installed see instructions packaged with solar panel option.

- a. Connect the previously run 12 VDC to the red and black wires protruding from the control box. Connect +12 VDC to the red wire; -12 VDC to the black wire.
- b. Connect the previously run furnace thermostat wires (if applicable) to the blue/white wires protruding from the control box. The polarity of these connections does not matter.
- c. Connect red/white wire protruding from the control box to the seven wire cable connected at thermostat +7.5 terminal. See FIG. 4.
- d. Connect the green wire protruding from the control box to the seven wire cable connected at thermostat "GND" terminal. See FIG. 4.
- e. Connect the yellow wire protruding from the control box to the seven wire cable connected at thermostat "COOL" Terminal. See FIG. 4.
- f. Connect the tan wire protruding from the control box to the seven wire cable connected at thermostat "FAN" terminal. See FIG. 4.
- g. Connect the blue wire protruding from the control box to the seven wire cable connected at thermostat "HI FAN" terminal. See FIG. 4.

- h. Connect the orange wire protruding from the control box to the seven wire cable connected at thermostat "HS/HP" terminal (if applicable). See FIG. 4.
- i. Connect the white wire protruding from the control box to the seven wire cable connected at thermostat "FUR" terminal (if applicable). See FIG. 4.
- j. Plug the electrical conduit from the upper unit into the mating connector in control box located on top of the ceiling template. See FIG. 8.

2. Connection of 120 VAC

⚠ WARNING

Disconnect 120 volt AC. Failure to follow these instructions could create a shock hazard causing death or severe personal injury.

⚠ WARNING

This product is equipped with a 3-wire (grounded) system for protection against shock hazard. Make sure that the appliance is wired into a properly grounded 120 volt AC circuit and the polarity is correct. Failure to do so could result in death, personal injury or damage to the equipment.

- a. Route power supply line through Romex connector into control box. Tighten connector, being careful not to pinch or short wires.
- b. Connect white to white; black to black; and green to green or bare copper wire using "listed" connectors.
- c. Push the wires into the box.
- d. Install the cover onto the junction box.

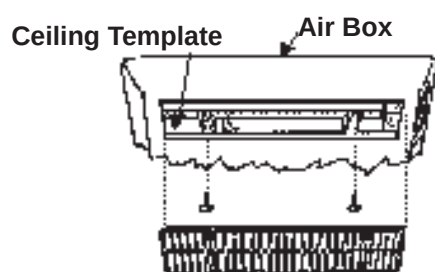
I. Air Distribution Box Installation

1. Remove the two return air grills and filters.
2. Place the air box onto the ceiling template and align the 4 screw holes.
3. Install the four (4) sharp pointed screws through the air box legs and into the pre-punched holes in ceiling template.

Note: There are four optional mounting holes on the outer edge of the return air opening for which no screws are provided. These are only required where an uneven ceiling does not allow proper fitting of the air box.

4. Install the filter-grilles by pushing them into place. See FIG. 11.

FIG. 11



5. Your unit is now installed and ready for operation. Please read and the follow operating instructions before attempting to run the unit.

FIG. 12

