

600312 PENGUIN®

600315 PENGUIN®

**ROOF TOP AIR CONDITIONER
USED WITH**

**3106615 AIR DISTRIBUTION BOX KIT and
3107541 ANALOG RELAY KIT**

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 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 &
OPERATING INSTRUCTIONS**

Model

600312.321

600315.321

600315.326

Revision:

Form No. 3308755.010 2/05
(Replaces 3308755.003)
(French 3308756.018)
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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.

1. GENERAL INFORMATION

A. THIS AIR CONDITIONER 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.

B. The ability of the air conditioner 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 air conditioner. 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

Operation on High Fan/Cooling mode will give optimum or maximum efficiency in high humidity or high outside temperatures.

Starting the air conditioner 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.

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.

C. Condensation

Note: The manufacturer of this air conditioner 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 air conditioner removes this moisture from the air during normal operation. Keeping doors and windows closed when this air conditioner is in operation will minimize condensed moisture on cold surfaces.

SPECIFICATIONS

MODEL NO.	NOMINAL CAPACITY (BTU/HR) COOLING	ELECTRICAL RATING	COMPRESSOR RATED LOAD AMPS	COMPRESSOR LOCKED ROTOR AMPS	FAN MOTOR RATED LOAD AMPS	FAN MOTOR LOCKED ROTOR AMPS	SCFM-HIGH SPEED MAX/MIN	TOTAL STATIC MAX/MIN " W. C.	REFRIGERANT R-22 (OZ)	MINIMUM WIRE SIZE*	AC CIRCUIT PROTECTION *** USER SUPPLIED	INSTALLED WEIGHT (POUNDS)	MINIMUM GENERATOR SIZE** 1 UNIT/ 2 UNITS
600312.321	11,000	120VAC, 60 HZ., 1PH.	9.5	53.0	3.1	8.8	335/250	0.12/0.65	16.5	12 AWG	20 Amp	95	2.5 KW/4.0KW
600315.321	13,500		12.4	60.0	3.1	8.8	335/250	0.12/0.65	15.5	Copper up to 24'	20 Amp	96	3.5 KW/5.0KW
600315.326	13,500		12.4	60.0	3.1	8.8	335/250	0.12/0.65	17.0		20 Amp	102	3.5 KW/5.0KW

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

** Dometic Corporation 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

1. PRECAUTIONS

- A. Read Installation and Operating Instructions carefully before attempting to start your air conditioner installation.

! WARNING

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

- B. The Dometic Corporation will not be liable for any damages or injury incurred due to failure in following these instructions.
- C. Installation must comply with the National Electrical Code and any State or Local Codes or regulations.
- D. **DO NOT** add any devices or accessories to this air conditioner except those specifically authorized by Dometic.
- E. This equipment must be serviced by qualified personnel and some states require these people to be licensed.

2. CHOOSING PROPER LOCATION FOR THE AIR CONDITIONER

This air conditioner is specifically designed for installation on the roof of a recreational vehicle (RV).

A. NORMAL LOCATION

The air conditioner is designed to fit over an existing roof vent opening. When the vent is removed, it normally creates a 14-1/4" X 14-1/4" ($\pm 1/8$ ") opening.

B. OTHER LOCATIONS

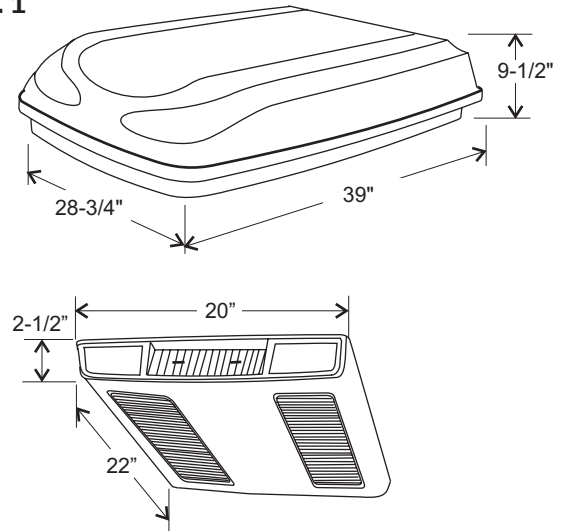
When no roof vent is available or another location is desired, the following is recommended:

- For one unit installation: The air conditioner should be mounted slightly forward of center (front to back) and centered from side to side.
- For two unit installations: Install one Air Conditioner 1/3 and one Air Conditioner 2/3's from front of RV and centered from side to side.

It is preferred that the air conditioner be installed in 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 600312 and 600315 series.

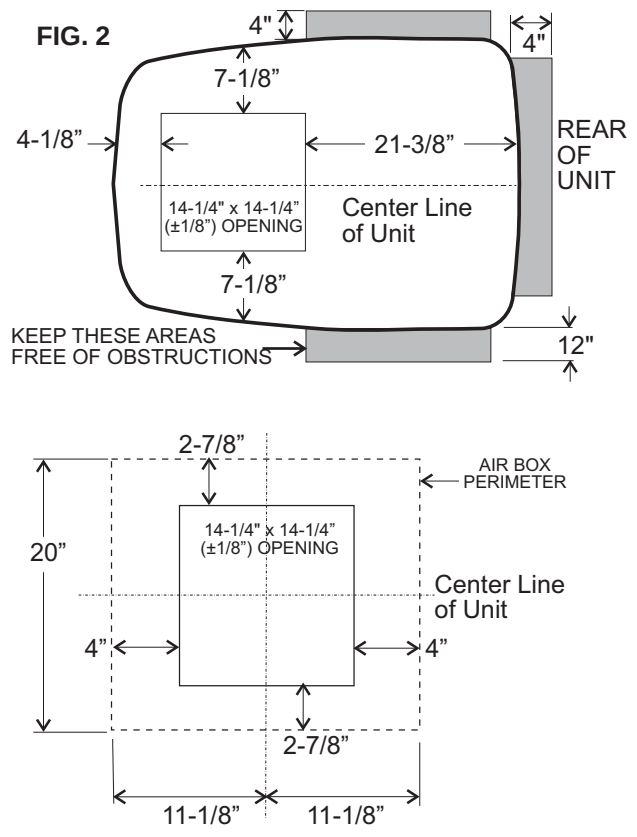
FIG. 1



C. AFTER LOCATION HAS BEEN SELECTED:

- Check for obstructions in the area where air conditioner will be installed.
- 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.
- Check inside the RV for air box obstructions (i.e. door openings, room dividers, curtains, ceiling fixtures, etc.). See FIG. 2.

FIG. 2



3. ROOF PREPARATION

Read all of the following instructions before beginning the installation.

! 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.

A. CEILING OPENING REQUIREMENTS

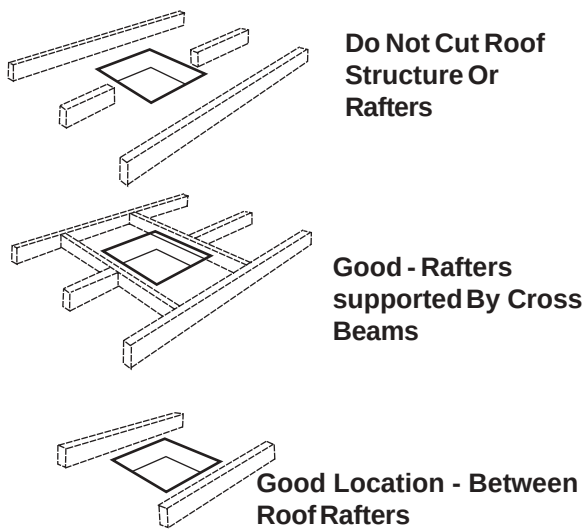
1. A 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening must be cut through the roof and ceiling of the RV. This opening must be located between the roof reinforcing members.

CAUTION

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

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

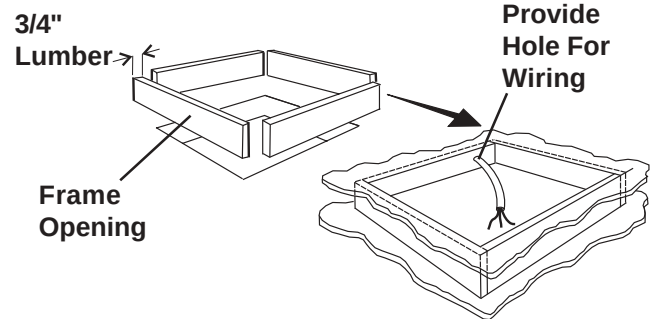
FIG. 3



B. OPENING PREPARATION

1. If the opening exceeds 14-3/8" x 14-3/8", it will be necessary to install spacers.
2. If the opening is less than 14-1/8" x 14-1/8", it must be enlarged.
3. Route a copper 12 AWG, with ground, 120 VAC supply line from the 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" ($\pm 1/8$ ") 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 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.
4. If a furnace is to be connected, wires must be run from the furnace to the air conditioner.
5. 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 (if applicable) and thermostat wires. See FIG. 4.

FIG. 4



6. The 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening is part of the return air system of the Air Conditioner and must be finished in accordance with NFPA Standard 501C Section 2.7.
7. Route a dedicated 12 VDC supply line (18-22 AWG) from the RV's converter or battery to the roof opening.
 - a. This supply line must be located in the front portion of the 14-1/4" ($\pm 1/8$ ") opening.
 - b. Make sure that at least 15" of supply wire extends into the roof opening.
8. If a furnace is to be controlled by the system, the two furnace thermostat leads must be routed to the roof opening of the air conditioner that will control it. Make sure that at least 15" of the furnace thermostat wires extend into the roof opening.

4. THERMOSTAT AND CABLE INSTALLATION

A. LOCATION

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

1. Locate the thermostat about 54" above the floor.
2. Install thermostat on a partition, **NEVER** on an outside wall;
3. **NEVER** expose it to direct heat from lamps, sun or other heat producing items;
4. Avoid locations close to doors that lead outside, windows or adjoining outside walls;
5. Avoid locations close to supply registers and the air from them;
6. Never locate thermostat in a room that is warmer or cooler than the rest of the coach - such as the kitchen.
7. The major living area is normally a good location.

B. CABLE INSTALLATION

1. A seven-conductor cable, 18 to 22 AWG is to be used for low voltage connections.
2. Choose the shortest, direct route from the 14-1/4" ($\pm$ 1/8") opening to the thermostat location selected.
3. Consider where screws, nails or staples might contact the cable.
4. Leave approximately 6" of cable extending through the wall for connection to the thermostat.
5. Leave approximately 15" of cable extending into the 14-1/4" ($\pm$ 1/8") opening for connection at unit
6. If system is to control a gas furnace: Route two 18 gauge wires from the furnace to 14 inch opening at this time.

5. PLACING THE AIR CONDITIONER ON THE ROOF

- A. Remove the Air Conditioner from the carton and recycle. See FIG. 5.
- B. Place the Air Conditioner on the roof. See FIG. 5.

! WARNING

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

FIG. 5

Recycle All Cardboard

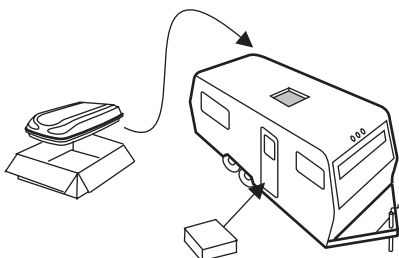
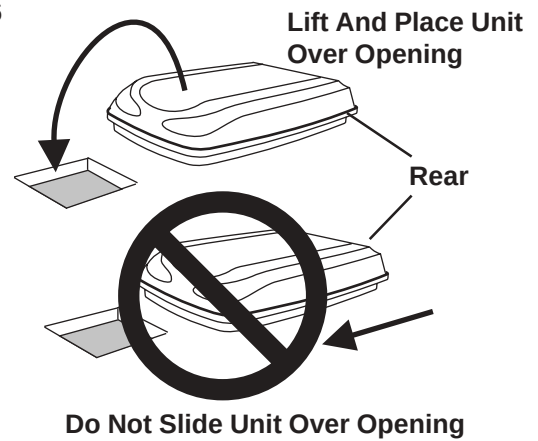


FIG. 6



- C. Lift and place the unit over the prepared opening using the gasket on unit as a guide. The **blunt end** goes toward the **rear** of the RV. See FIG. 6.

CAUTION

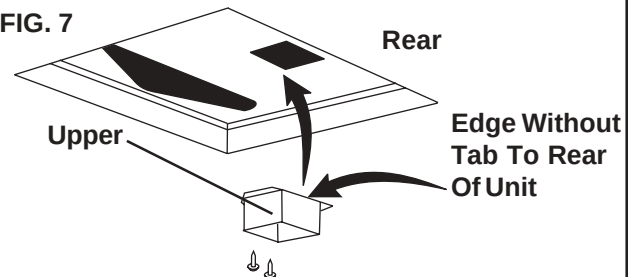
Do not slide the unit. This may damage the neoprene gasket attached to the bottom and create a leaky installation.

- D. Place the 3107561 Air Box Kit inside the RV. This box contains mounting hardware for the air conditioner and will be used inside the RV. See FIG. 5. This completes the outside work. Minor adjustments can be done from the inside of the RV if required.

6. DISCHARGE DUCT AND 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.
- B. Remove the upper duct from the ceiling template and locate it over the blower discharge. See FIG. 7.

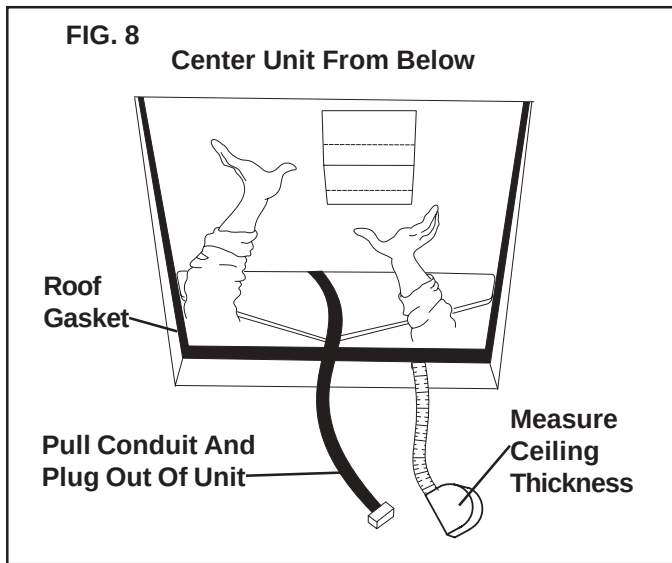
FIG. 7



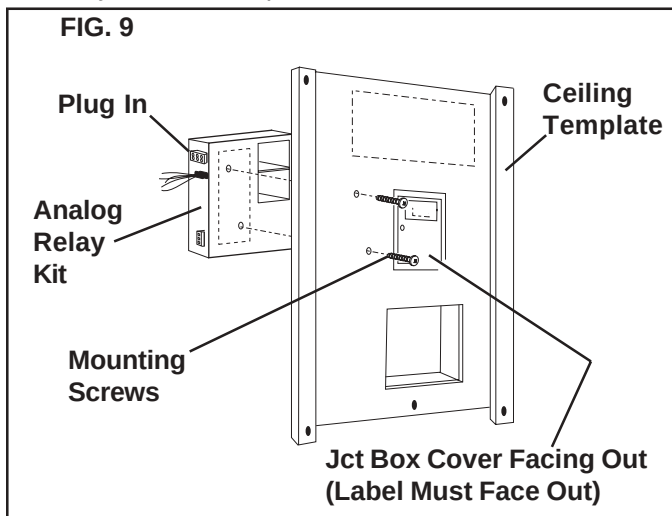
Note: The edge without the flange installs toward the **rear** of the RV.

- C. Use two of the sharp pointed sheet metal screws to hold the duct to the base pan. The holes are pre-punched in the pan for ease of location. See FIG. 7.

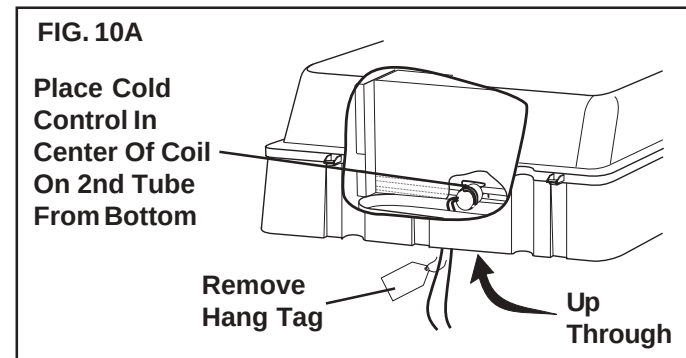
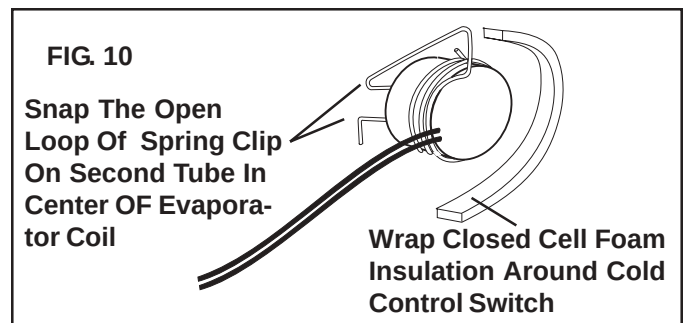
- D. Check gasket alignment over roof opening and adjust if necessary. Unit may be moved from below by lifting and sliding. See FIG. 8.



- E. Reach up into the return air opening and pull the conduit power cable down for later connection. Pull the low voltage wire and seven conductor cable down for later connection. See FIG. 8
- F. Measure the ceiling thickness:
1. If the distance is 2" to 3" remove the perforated tabs from the bottom duct only.
 2. If the distance is 3" to 4" install the ducts as received.
 3. If the distance is 4" to 6" (maximum thickness), optional duct and bolt kits are available:
 Duct (Part No. 318556.000)
 Bolts (Part No. 3100895.006)
- G. 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. 9

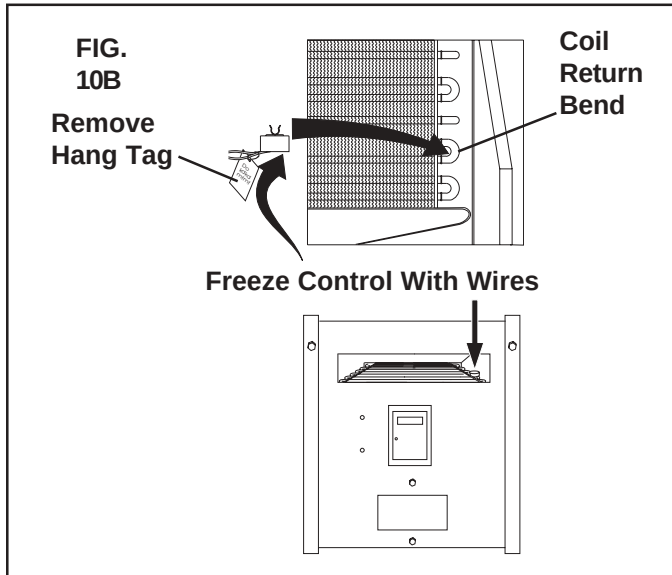


- H. If your installation includes the optional Electric Heat Kit, install it at this time. Follow the instructions with the heat package for its installation procedure.
- I. Remove the junction box cover from the Analog Relay Kit. See FIG. 9.
- J. Plug the electrical conduit from the upper unit into the mating connector in relay module located on top of the ceiling template. See FIG. 9
- K. Route the 120 VAC supply line through the strain relief in junction box. Tighten strain relief, making sure enough wire is inside junction box to connect with unit 120 VAC wire. Tighten screws on strain relief connector being careful not to pinch and cut into the insulation on power supply leads.
- L. Freeze Control Installation (Two Types)
1. Type using a snap on spring clip
 - a. Fits on all 579, 590, 591 and 595 Series Brisk Air units by placing 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 FIGS. 10 & 10A.

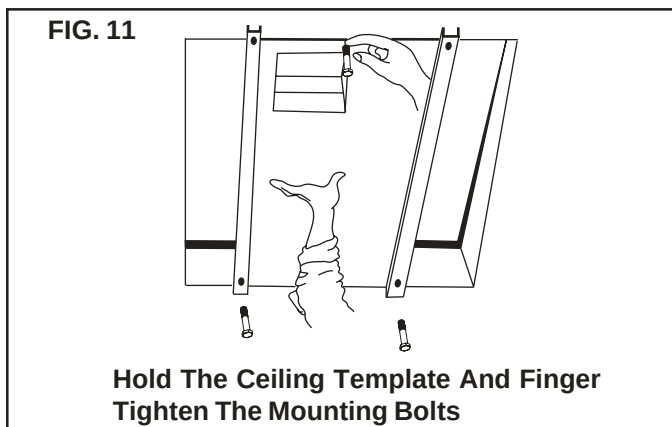


- b. Keep wires away from heat strip (if applicable) and sharp edges to prevent damaging the wires. Use wire ties if necessary. See FIGS. 10 & 10A.
- c. Remove installation notice hang tag from freeze control. See FIGS. 10 & 10A.

2. Type using a horseshoe welded snap clip.
 - a. Install on return bend located at left (curb side) side of evaporator coil as follows:
 - b. Locate "D" shaped notch in flange of evaporator coil. See FIG. 10B.



- c. Place the horseshoe end of the freeze control through this notch and snap onto the coil return bend. When positioned correctly, control wires will be toward the evaporator housing away from the evaporator coil header. See FIG. 10B.
 - d. Remove installation notice hang tag from freeze control. See FIG. 10B.
- M.** Take the ceiling template and slide the lower duct over the upper duct.
- N.** Hold the ceiling template with one hand and with the other install the three 1/4" mounting bolts through the template and into the base pan.
1. Finger-tighten the (3) bolts and check alignment. There should be an equal opening on each side and the rear flange must be tight against the roof opening. See FIG. 11.



CAUTION

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

2. **EVENLY** tighten the bolts to a torque of 40 to 50 inch pounds. This will compress the roof gasket to approximately 1/2".

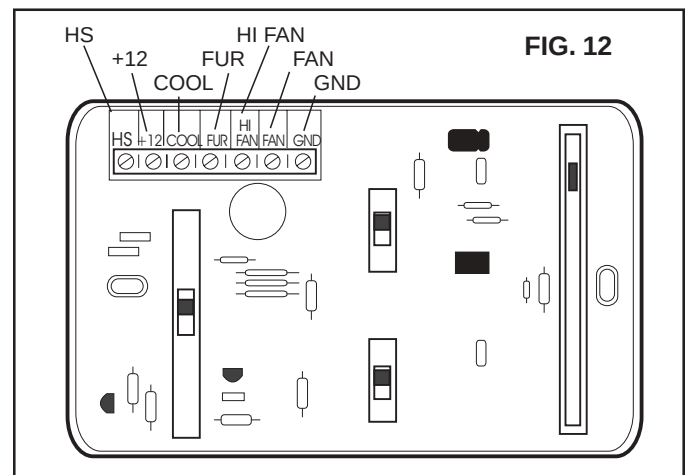
7. WIRING OF SYSTEM

A. 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.

1. Connect the previously run +12V DC to the red wire labeled +12V protruding from the relay kit.
2. Connect the previously run -12V DC to the black wire labeled -12V protruding from the relay kit.
3. Connect the red/white wire to the thermostat +7.5.
4. Connect the unit green wire to the thermostat GND terminal.
5. Connect the unit yellow wire to the thermostat COOL terminal.
6. Connect the unit tan wire to the thermostat FAN terminal.
7. Connect the unit blue wire to the thermostat HI FAN.
8. Connect the unit orange wire to the thermostat HS terminal (if applicable).
9. Connect the unit white wire to the thermostat FUR terminal (if applicable).
10. Connect the unit blue/white wires to the two furnace control wires (if applicable).



B. CONNECTION OF 120 VOLT POWER SUPPLY

⚠ WARNING

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

1. Connect white to white; black to black; and green to green or bare copper wire using appropriate sized twist connectors. **Tape** the twist wire connectors to the supply wire to assure they don't vibrate off.

⚠ WARNING

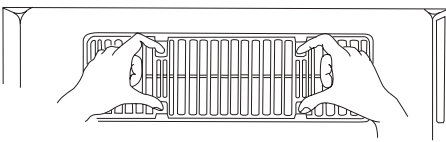
This appliance is equipped with a 3-wire (grounded) system for protection against shock hazard. Make sure that the appliance is wired into a properly grounded 120 volt AC circuit and the polarity is correct. Failure to do so could result in death, personal injury or damage to the equipment.

2. Push the wires into the box and tighten the strain relief.
3. Install the cover (part of the mounting hardware) with the one blunt point screw provided.

8. AIR BOX INSTALLATION

- A. Remove the two filter-grilles from the air box. See FIG. 12.

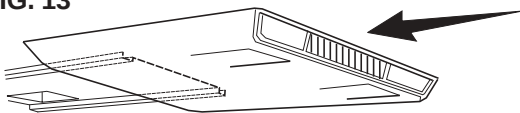
FIG. 12



Remove Filter Grill

- B. Slide the air box over the ceiling template. See FIG. 13.

FIG. 13



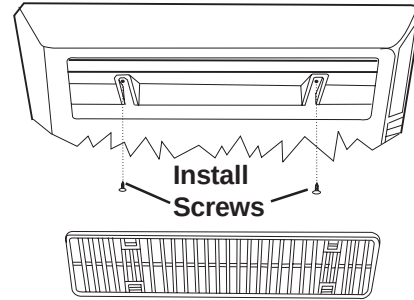
Slide Air Box Over Template

- C. Install the four (4) sharp pointed screws through the air box legs and into the pre-punched holes in ceiling template. See FIG. 14.

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.

- D. Install the filter-grilles by pushing them into place. See FIG. 14.
- E. Turn on power to the air conditioner for operational check.

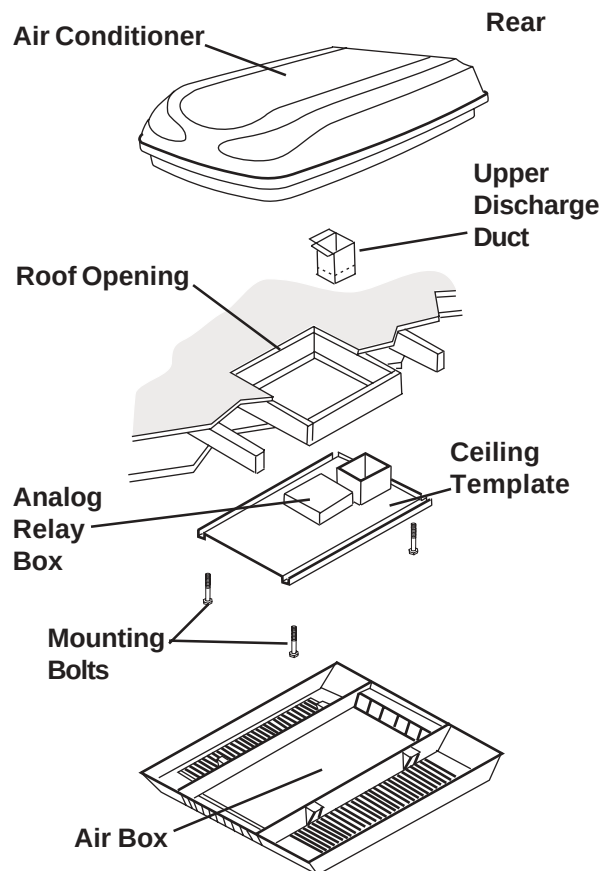
FIG. 14



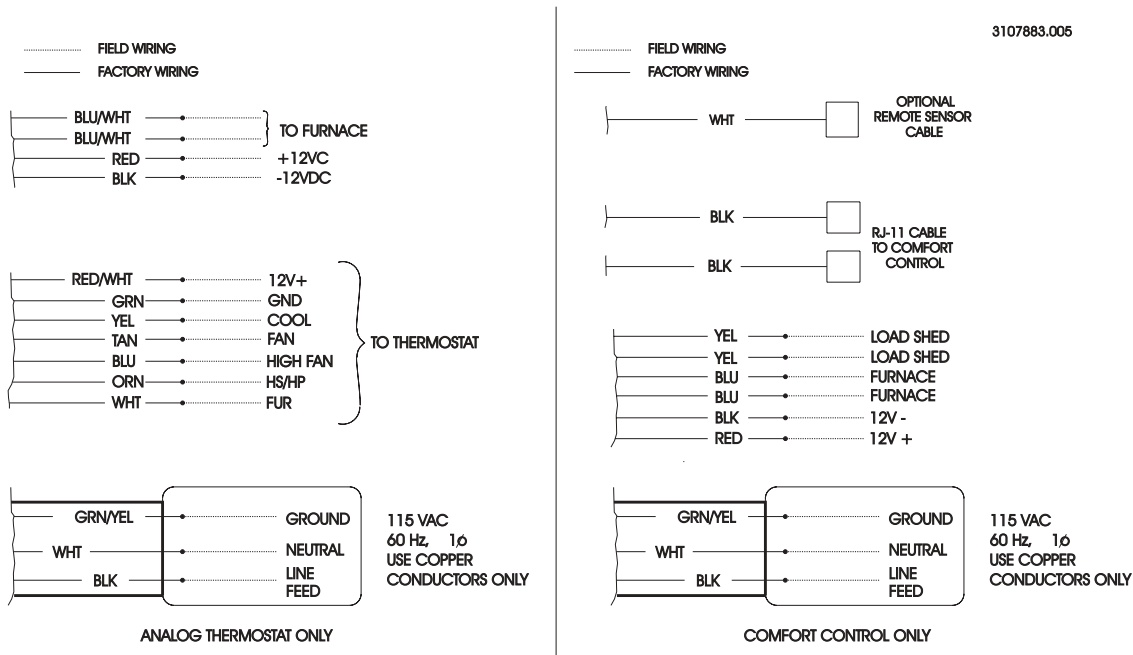
Push Filter In Place

FIG. 15

Roof Mount Assembly



AIR BOX WIRING DIAGRAM



UPPER UNIT WIRING DIAGRAM

