



RECORD THIS UNIT INFORMATION FOR
FUTURE REFERENCE:

Model Number _____
Serial Number _____
Date Purchased _____

**Roof Top Air Conditioner
Penguin Model
621815, 621816 & 621835
Roof Top Heat Pump
Penguin Model
631815 & 631816**

used with

3106615.XXX Air Distribution Box

AND

3312024.XXX Comfort Control Center Thermostat

AND

3311931.XXX Remote Temperature Sensor Kit

This Unit Is Designed For OEM Installation

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
CANADA
519-720-9578

**For Service Center
Assistance Call:**
800-544-4881



! 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

MODEL

621815.331	621635.336
621815.336	631815.331
621816.331	631815.336
621816.336	631816.331
621835.331	631816.336

3312543.000

Form No. 3312543.000 11/08
(French 3312544.000)
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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/Heat Pump (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 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 temperature 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.

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. During normal operation this unit removes moisture from the air. 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 120 VAC 60Hz. 1PH	Compressor Rated Load Amps	Compressor Locked Rotor Amps	Fan Motor Rated Load Amps	Fan Motor Locked Rotor Amps	Refrigerant R-22 (Oz.)	Minimum Wire Size* 12 AWG Copper Up to 24'	AC Circuit Protection ***Installer Supplied	Minimum Generator Size** 1 Unit / 2 Units
621815.331	13,500		12.4	60.0	3.5	10.0	15.2		20 Amp	3.5 KW / 5.0 KW
621815.336	13,500		12.4	60.0	3.5	10.0	15.2		20 Amp	3.5 KW / 5.0 KW
621816.331	15,000		12.0	64.0	3.3	8.2	20.0		20 Amp	3.5 KW / 5.0 KW
621816.336	15,000		12.0	64.0	3.3	8.2	20.0		20 Amp	3.5 KW / 5.0 KW
621835.331	13,500		12.4	60.0	3.5	10.0	15.2		20 Amp	3.5 KW / 5.0 KW
621835.336	13,500		12.4	60.0	3.5	10.0	15.2		20 Amp	3.5 KW / 5.0 KW
631815.331	13,500		12.4	60.0	3.5	10.0	23.5		20 Amp	3.5 KW / 5.0 KW
631815.336	13,500		12.4	60.0	3.5	10.0	23.5		20 Amp	3.5 KW / 5.0 KW
631816.331	15,000		12.0	64.0	3.3	8.5	20.0		20 Amp	3.5 KW / 5.0 KW
631816.336	15,000		12.0	64.0	3.3	8.5	20.0		20 Amp	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 this 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. **DO NOT** add any devices or accessories to this unit except those specifically authorized in writing by Dometic, LLC.
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:

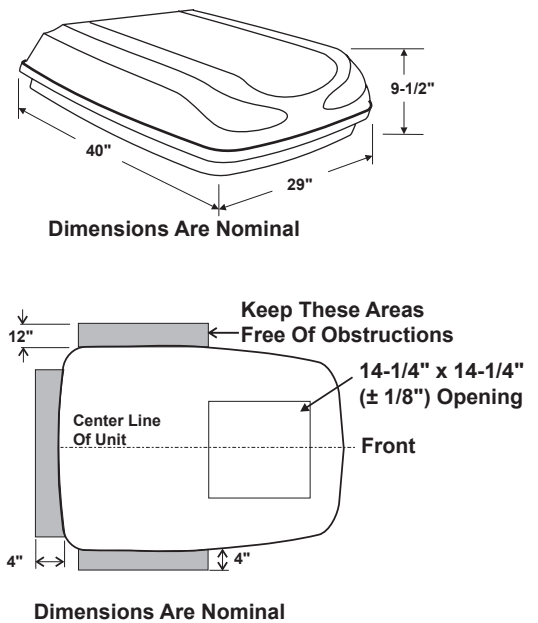
- Size of RV;
 - Window area (increases heat gain);
 - Amount of insulation in walls and roof;
 - Geographical location where the RV will be used;
 - Personal comfort level required.
1. For one unit installation: The unit should be mounted slightly forward of center (front to back) and centered from 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.

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: Up to an 8° slant to **either** side, or front to back, is acceptable for all models listed in this manual.

3. After Location Has Been Selected:
 - a. Check for obstructions in the area where unit will be installed. See FIG. 1.

FIG. 1



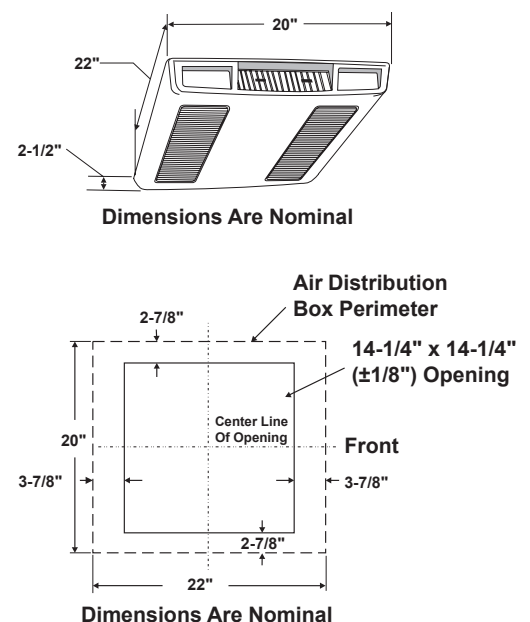
- b. The roof must be designed to support 130 pounds when the RV is in motion. Normally a 200 lb. static load design will meet this requirement.

CAUTION

It is the responsibility of the installer of this 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 unit may leak into the interior causing damage to the product and the RV.

- c. Check inside the RV for air distribution box obstructions (i.e. door openings, room dividers, curtains, ceiling fixtures, etc.) See FIG. 2.

FIG. 2



C. Roof Preparation

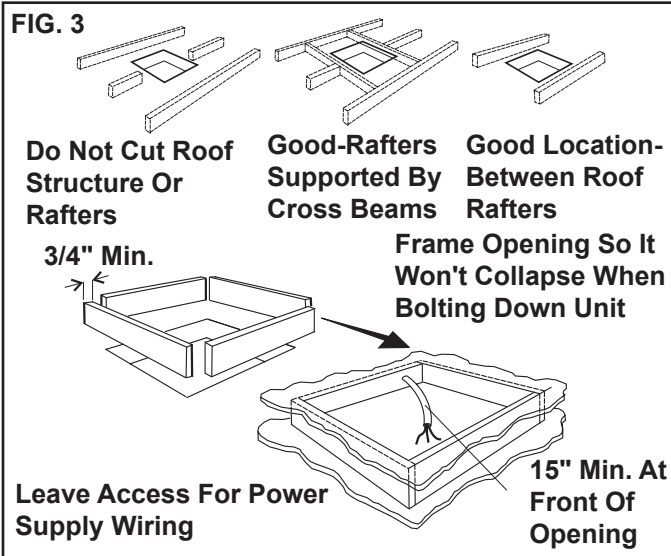
1. Opening Requirements - Before preparing the ceiling opening, the type of system options must be decided upon. Read all of the following instructions before beginning the installation.

⚠ WARNING

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

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

FIG. 3



CAUTION

It is the responsibility of the installer of this 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 unit may leak into the interior causing damage to the product and the RV.

D. Wiring Requirements

1. Route a 120 VAC copper 12 AWG, with ground, 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" ($\pm 1/8$ ") opening.
 - b. The power **MUST** be on a separate time delay fuse or HACR circuit breaker. The proper protection can be determined from the chart on page 3.
 - c. Make sure that at least 15" of supply wire extends into the roof opening. This ensures and easy connection at the junction box.
 - d. Wiring must comply with NFPA 70: National Electrical Code regulations and any State or Local Codes or regulations.
 - e. Protect the wire where it passes into the opening with approved method. See paragraph "d" above.
2. Route a dedicated 12 VDC supply line (18-22 AWG) from the RV's converter (filtered side) or battery to the roof opening.

Note: If more than 2 zones exist, route a dedicated 12 VDC supply line (18-22 AWG) to zone 1 and zone 3 roof opening.

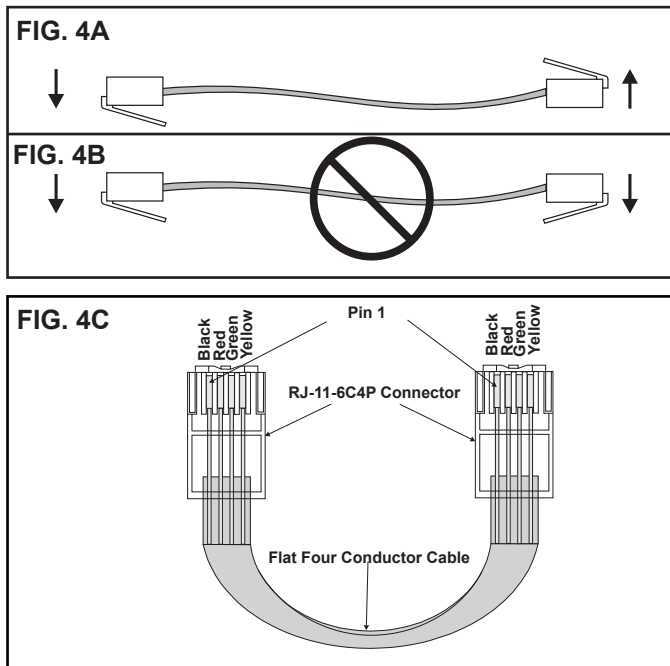
- a. This supply line must be located in the front portion of the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening.
 - b. Make sure that at least 15" of supply wire extends into the roof opening.
3. Route a remote temperature sensor (a remote temperature sensor is required for the system to operate) from the roof opening to the remote temperature sensor location. The 2 pin connector end goes to the roof opening. See remote temperature sensor installation instructions for proper sensor location.
 4. Route a 4 conductor communication cable from the Comfort Control Center thermostat mounting position into the 14-1/4" x 14-1/4" ($\pm 1/8$ ") roof opening. Make sure that at least 15" of the wire extends into the roof opening and 6" extend from the wall at the mounting position of the Comfort Control Center thermostat. See Section E-1.
 5. If a furnace is to be controlled by the system, the two furnace thermostat leads must be routed to the roof opening of the unit that will control it. Make sure that at least 15" of the furnace thermostat wire extends into the roof opening.
 6. If an Energy Management System (load shed feature) is to be used with the control, two wires must be routed to the roof opening of the zone to be managed. The signal required for this function is normally an open relay contact. When the EMS calls for the compressor to shut off, the relay contacts should close. Make sure at least 15" of the EMS wire extends into the roof opening.

7. When more than one unit is installed (additional zones) an additional 4 conductor communication cable must be routed between each unit. Make sure that at least 15" of the wire extends into the roof opening. See FIG. 20.
8. If an automatic generator start kit (AGS) will be installed, a 4 conductor communication cable must be routed from the last unit to the AGS kit location. Follow AGS kit instructions for installation.

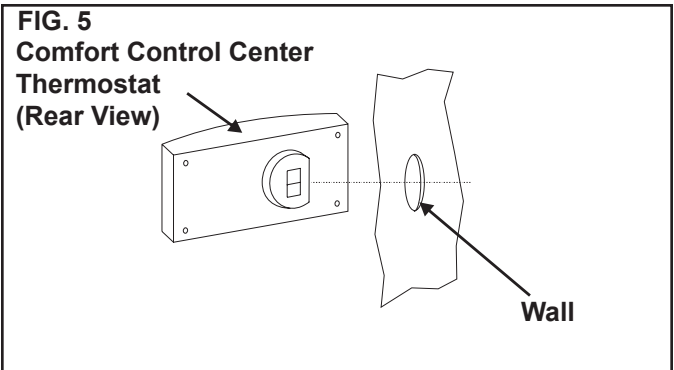
E. Dometic Comfort Control Center Thermostat, Communication Cable, And Remote Temperature Sensor Installation

1. Comfort Control Center Location
 - a. Select a location for the Comfort Control Center thermostat that is clearly visible and convenient for the user to program.
2. Communication Cable Installation
 - a. A 4 conductor communication cable must be routed from the roof opening to the Comfort Control Center thermostat.
 - b. The communication cable that should be used is a flat, 4 conductor telephone cable.
 - c. The communication cable must be terminated with two (2) RJ-11-6C4P telephone connectors. Refer to the crimp tool manufacture for crimping instructions.

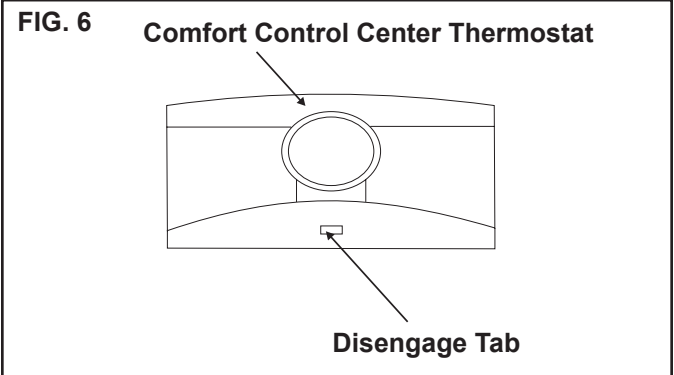
Important: RJ-11-6C4P connectors must be installed as shown in FIGS. 4A & 4C.



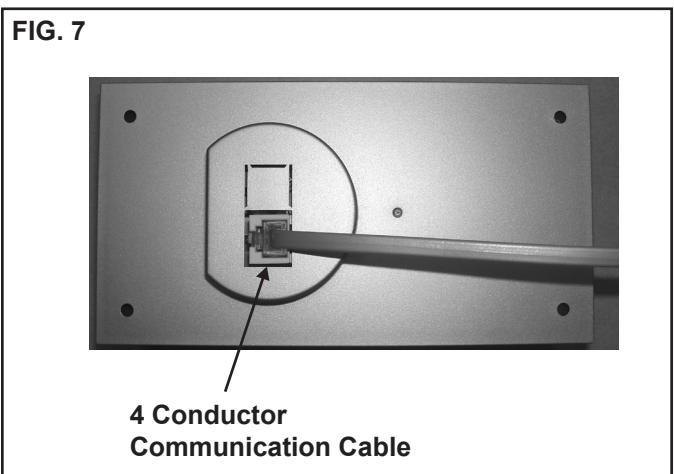
- d. Choose the shortest, most direct route from the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening to the selected Comfort Control Center thermostat location. Leave 6" of cable extending through the wall.
- e. Route the communication cable through the 2" diameter hole in the wall required for the thermostat. See FIG. 5.



3. Remote Temperature Sensor
 - a. Refer to the instructions provided with the remote temperature sensor for details of installation.
4. Comfort Control Center Thermostat Installation
 - a. Carefully separate the thermostat base plate from the thermostat cover. Insert a small screw driver into the slot on bottom of thermostat and disengage the tab.



- b. Insert the 4 conductor communication cable through the hole in base plate. Align thermostat base plate with hole in wall. Make sure base plate is level and attach base plate to wall using the 4 supplied screws.
- c. Insert the 4 conductor communication cable connector (RJ-11-6C4P) into the connector on the back of the thermostat. See FIG. 7.



- d. Align the thermostat with the back plate and snap into position.

F. Placing The Unit On The Roof

⚠ CAUTION

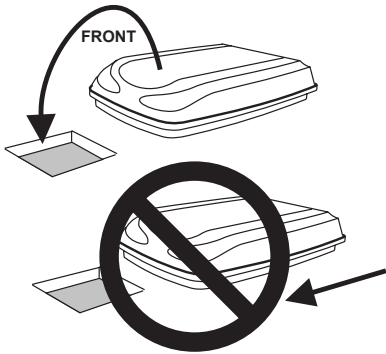
This unit weighs approximately 100 pounds. To prevent back injury, use a mechanical hoist to place unit on roof.

1. Remove the unit from the carton and discard carton.
2. Place the unit on the roof.
3. Lift and place the unit over the prepared opening using the gasket on the unit as a guide. See FIG. 8.

CAUTION

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

FIG. 8



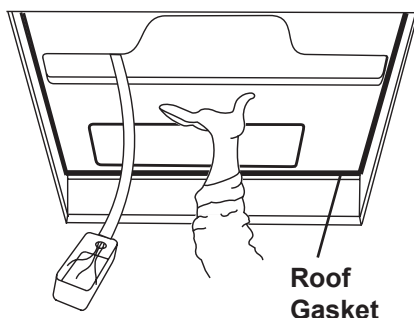
4. Place the 3106615.XXX Air Distribution Box Kit inside the RV. This box contains mounting hardware for the unit and will be used inside the RV. See FIG. 19.
This completes the outside work. Minor adjustments can be done from the inside the RV if required.

G. Installing The Unit

1. Check gasket alignment of the unit over the roof opening and adjust if necessary. Unit may be moved from below by slightly lifting. See FIG. 9.

FIG. 9

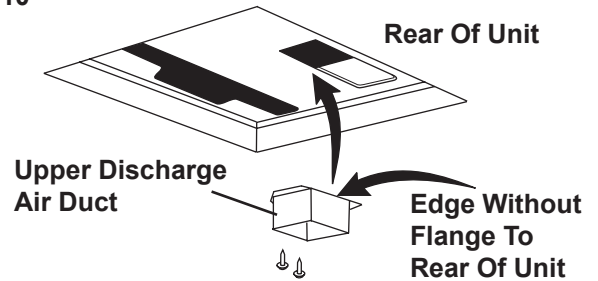
Center Unit From Below



2. Remove air distribution box and mounting hardware from carton. The upper duct is shipped inside the lower duct which is part of the ceiling template.
3. All models listed in this manual will use a three (3) bolt pattern for installing the 3106615.XXX Air Distribution Box Kit. These bolts along with the Romex connector and junction box cover are furnished in this kit.
4. Remove upper duct from ceiling template and locate it over blower discharge. See FIG. 10.

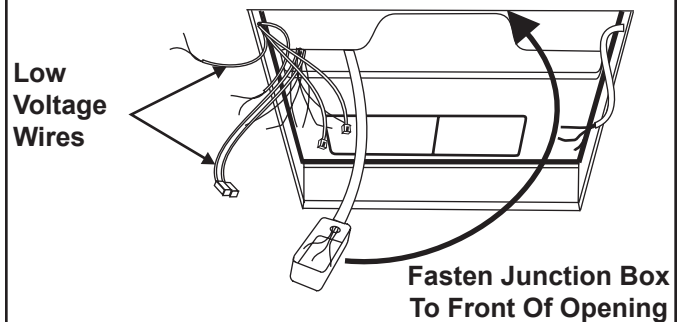
Note: Edge without flange installs toward REAR of opening.

FIG. 10



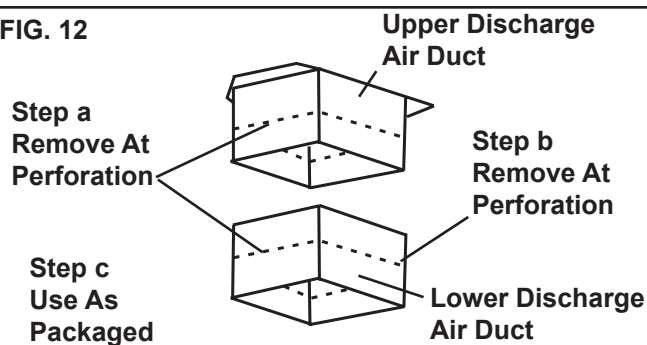
5. Use two (2) sharp pointed #10 sheet metal screws to hold duct to base pan. Screw holes are provided in bottom of base pan for these screws.
6. Reach up into the return air opening and pull the unit electrical cord down. Mount the junction box with screws to the framing in front of the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening. See FIG. 11.

FIG. 11



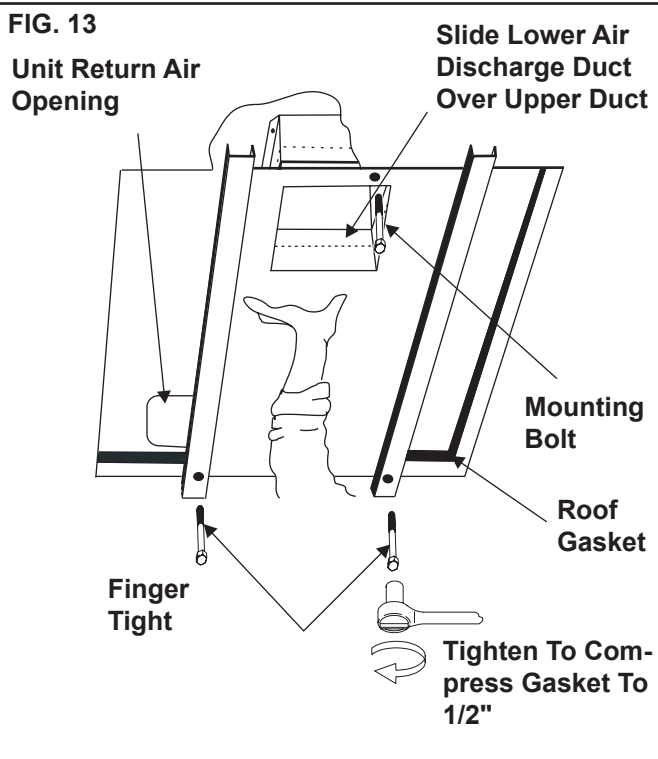
7. Install the Romex connector in the junction box.
8. Measure the ceiling to roof thickness:
 - a. If distance is 1"-2", remove perforated tabs from both upper and lower ducts. See FIG. 12.
 - b. If distance is 2"-3", remove perforated tabs from bottom duct only. See FIG. 12.
 - c. If distance is 3"-4", install ducts as received. See FIG. 12.
 - d. If distance is 4"-6", use optional 318556.000 Duct Adaptor and 3100895.006 Bolt Kit.

FIG. 12



9. Install ceiling template by sliding lower duct over upper duct. See FIG. 13.
10. Hold the ceiling template up to the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening.
 - a. Start each mounting bolt through the ceiling template and up into the unit base pan by hand. See FIG. 13.

FIG. 13



- **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. See FIG. 13.

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 System

Reach up into the return air opening and pull the remaining wires down. See FIG. 11.

1. Low Voltage Wire Connections

CAUTION

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

- a. Connect the previously run 12 VDC wires to the red and black wires protruding from the unit return air opening. 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 wires protruding from the return air opening. The polarity of these connections does not matter.
- c. Terminate the 4 conductor communication cable(s) protruding into the 14-1/4" x 14-1/4" ($\pm 1/8$ ") roof opening. The cable(s) must be terminated with a telephone RJ-11-6C4P connector. Refer to the crimp tool manufacturer for crimping instructions.

Important: RJ-11-6C4P connectors must be installed as shown in FIG. 4A & 4C.

- d. Plug the 4 conductor communication cable into the RJ-11-6C4P telephone coupler protruding from the return air opening.
- e. Plug the remote temperature sensor cable into the white 2 pin connector protruding from the return air opening.
- f. Connect the previously run Energy Management System wires (if applicable) to the yellow wires protruding from the return air opening. The polarity of these connections does not matter.
- g. If an automatic generator start (AGS) kit is installed, follow installation instructions furnished with AGS kit.

2. 120 VAC Power Supply Connection

WARNING

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

Note: Wiring must comply with NFPA 70: National Electrical Code regulations and any State or Local Codes or regulations.

- a. Route power supply line through Romex connector and into junction box on side away from the ceiling template. Tighten connector making sure not to pinch or short wiring.

⚠ WARNING

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

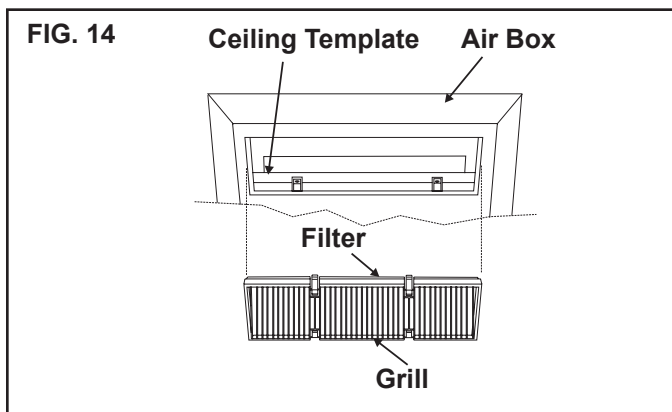
- Connect white to white; black to black; and green to green or bare copper wire using appropriate size connectors.
- Tape the connectors to the supply wire to assure they don't vibrate off.
- Push the wires into the box.
- Install the cover onto the junction box.

I. Air Distribution Box Installation

- Remove the two filter-grilles from the air distribution box.
- Slide the air distribution box over the ceiling template.
- Install the four (4) sharp pointed screws through the air distribution 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 distribution box.

- Install the filter-grilles by pushing them into place. See FIG. 14.



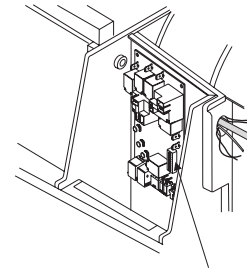
- This completes the unit installation.

J. System Configuration, Reset & Check Out

Now that the system is installed, it is necessary to do a system configuration, reset and check out.

- Electronic Control Configuration**
Depending on the equipment options installed by the recreational vehicle manufacturer, the appropriate dip switches will need to be switched to the "ON" position. Placing the switch in the "ON" position selects that option. See FIGS. 15, 16 & 17.

FIG. 15

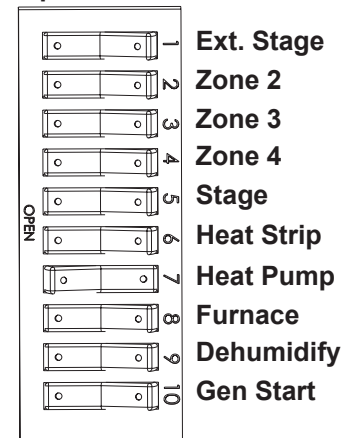


Dip Switches

Note: Dip switches are in the "OFF" position when shipped from the factory except on heat strip models. On heat strip models the heat strip dip switch only is in the "ON" position. To gain access to the dip switches, the outside plastic shroud must be removed from the unit. Next remove the electrical box cover. The electrical box will be on the curb side of the RV after installation. See FIGS. 15, 16 & 17.

FIG. 16

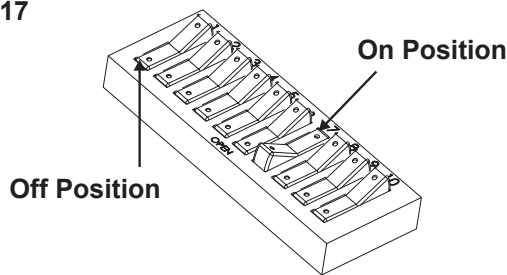
Dip Switches



- Ext. Stage - Ext. Stage is not used on this unit. Leave in the "OFF" position.
- Zone selection - Each Comfort Control Center thermostat can have up to 4 zones. When only one unit is installed it becomes Zone 1 and no dip switch setting is required. Each additional unit must be assigned a zone (2 through 4). Each unit must have a different zone setting.
- Stage selection - Stage is not used on this unit. Leave in the "OFF" position.
- Heat Strip - Units without heat strips leave in the "OFF" position. Units with a heat strip, the # 6 dip switch will be in the "ON" position.

- e. Heat Pump - If unit is a heat pump, the heat pump dip switch # 7 must be placed in the "ON" position.
- f. Furnace - If a Furnace/Aqua heat system has been connected to this unit, the furnace dip switch must be placed in the "ON" position.
- g. Dehumidify - Dehumidify is not used on this unit. Leave in the "OFF" position.
- h. Gen start selection - Leave in the "OFF" position.
- i. Replace the unit electrical box cover and outside plastic shroud.
- j. Repeat this procedure for each additional zone.

FIG. 17



2. System Reset

After setting the dip switches in the electronic control, do a system reset.

- a. Reconnect the 12 VDC and 120 VAC power supplies.
- b. Make sure the Comfort Control Center thermostat is in the **OFF** mode.
- c. Simultaneously press the **MODE** and **ZONE** buttons. The LCD will display "IniT" and all available zones.
- d. Release the **MODE** and **ZONE** buttons.
- e. Press the **ON/OFF** button to exit system set up.
- f. When a dip switch is turned on after initial configuration, a system reset will need to be done before the Comfort Control Center thermostat will recognize the updated selection.

3. System Checkout

Verify that all features of the installed system work. See Comfort Control Center thermostat Operating Instructions or User's Guide. Check fan speeds, cooling mode, heat pump mode, and furnace mode (if connected). If the features do not work disconnect the 12 VDC and 120 VAC power supplies and verify that all wiring is correct and that the correct dip switches have been turned on.

K. Furnace/Aqua Temperature differential setting

This system can be configured to operate using an ON/OFF differential of either 1 degree F. or 2 degree F. See FIG. 18.

1. To set the differential, simultaneously press the **PROGRAM** button and the $\wedge$ up button on the Comfort Control Center thermostat. "diF1" will appear in the display while the buttons are pressed. See FIG. 18. To set the 2 degree differential, simultaneously press the **PROGRAM** button and the $\vee$ down button. "diF2" will appear in the display while the buttons are pressed.

FIG. 18

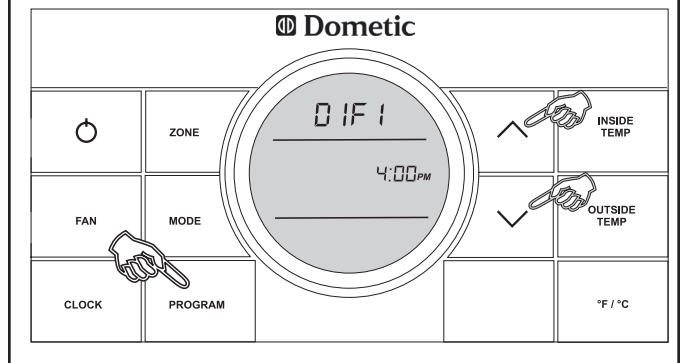


FIG. 19

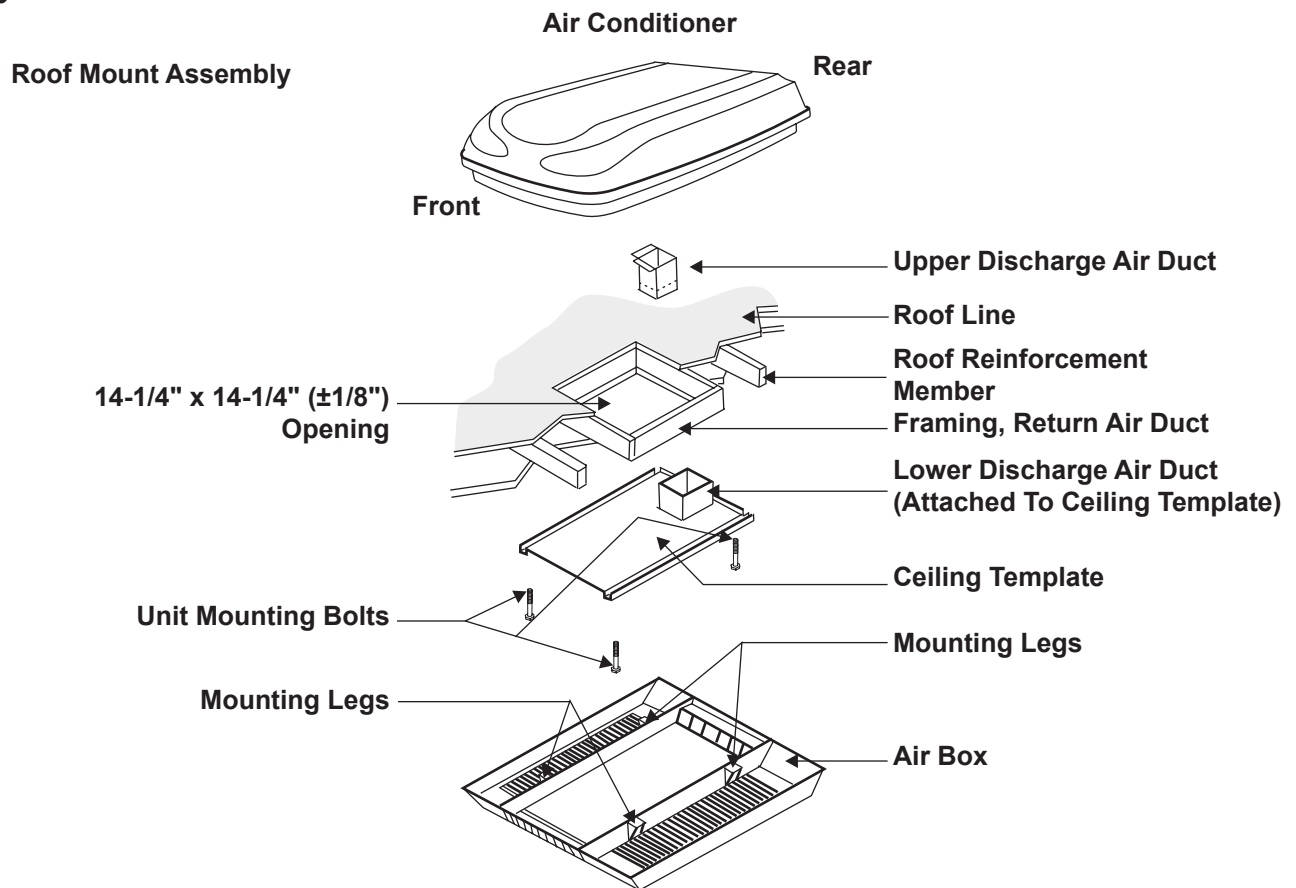
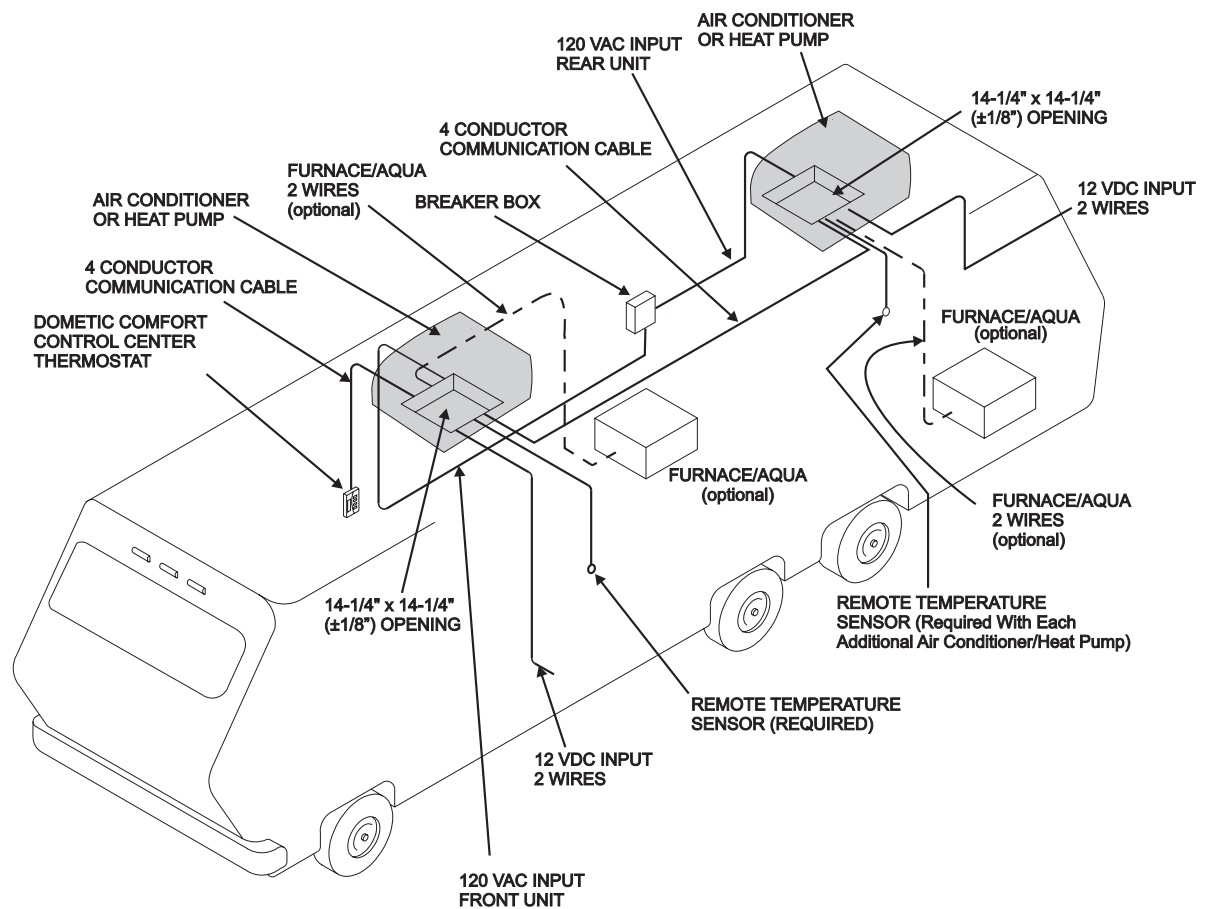
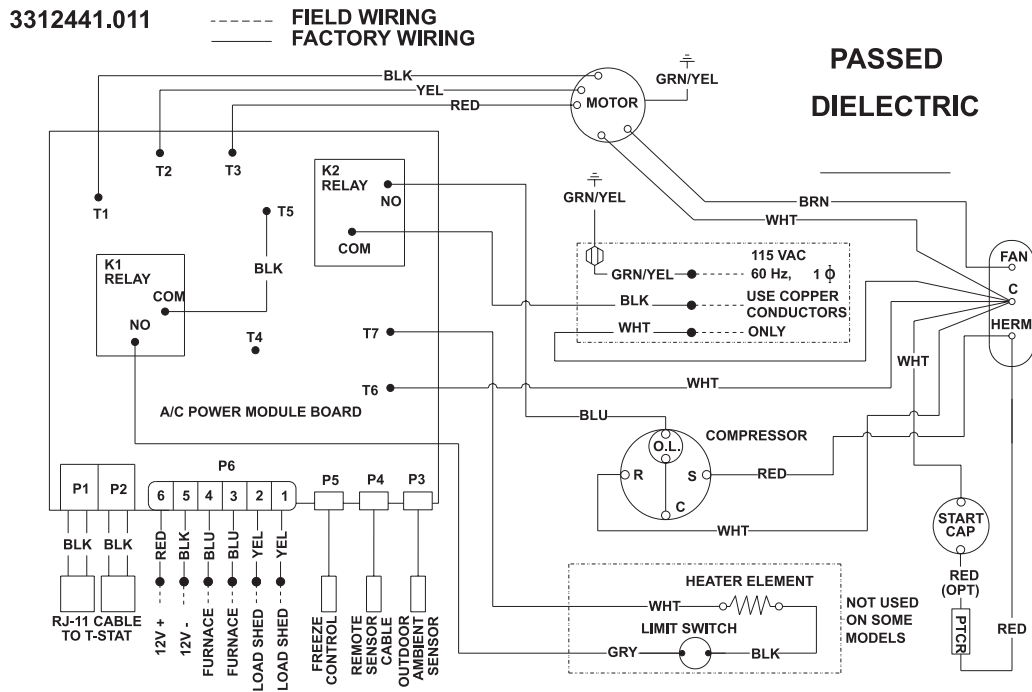


FIG. 20



621815, 621816 & 621835 WIRING DIAGRAM



631815 & 631816 WIRING DIAGRAM

