



RECORD THIS INFORMATION FOR FUTURE REFERENCE
BEFORE INSTALLING THE UNIT:

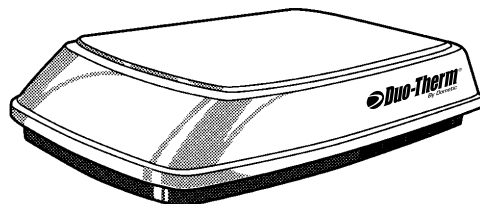
Model Number _____
Serial Number _____
Date Purchased _____
Place of Purchase _____

620315 PENGUIN®
620325 PENGUIN®
ROOF TOP AIR CONDITIONER &
630215 PENGUIN®
ROOF TOP HEAT PUMP
USED WITH
3106615 AIR DISTRIBUTION BOX KIT and
DUO-THERM COMFORT CONTROL CENTER™

USA
SERVICE OFFICE
The Dometic Corp.
509 So. Poplar St.
LaGrange, IN 46761
(219) 463-4858

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CANADA N3H 2N7
(519) 653-4390

**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**

REVISION

Form No. 3106678.059 12/99
(Replaces 3106678.042)
(French 3108503.016)
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LaGrange, IN 46761

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

MODELS

620315.321
620315.421
620325.321
620325.421
630215.321
630215.421

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: means if the safety information is not followed someone could be injured or killed.

CAUTION: means if the safety information is not followed someone might be injured.

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 5.50 inches distance between roof to ceiling of recreational vehicle. Alternate installation methods will allow for roofs more than 5.50 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

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.

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 NUMBER	620315.421 620325.421	620315.321 620325.321	630215.421	630215.321
Nominal Capacity (BTU/HR) *	13,500	13,500	13,500	13,500
Electrical Rating	115 VAC, 60 Hz., 1 PH.			
Compressor Rated Load Amps	11.5	12.4	11.5	12.4
Fan Motor Rated Load Amps	3.1	3.1	3.1	3.1
Compressor Locked Rotor Amps	50.0	60.0	50.0	60.0
Fan Motor Locked Rotor Amps	8.8	8.8	8.8	8.8
SCFM - High Speed Max./Min.	335/250			
Refrigerant (R22) oz.	17	15.5	19.5	24.5
Minimum Wire Size **	12 AWG Copper up to 24 ft.			
AC Circuit Protection (User Supplied)	20 Amp Time Delay Fuse or HACR Circuit Breaker			
DC Circuit Protection (User Supplied)	Installation must comply with all National, State, Providence and/or Local Electrical Codes			
Installed Weight (Pounds)	102			
Minimum Generator	1 UNIT	3.5 KW		
Size ***	2 UNITS	5.0 KW		

* Maximum unit performance achieved at full rated voltage.

** For lengths over 24 ft., consult the National Electrical Code.

*** The Dometic Corp. 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. Also keep in mind generators lose power at high altitudes and from lack of maintenance.

INSTALLATION INSTRUCTIONS

1. PRECAUTIONS

⚠ WARNING

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

- Read Installation and Operating Instructions carefully before attempting to start your air conditioner.
- The Dometic Corporation will not be liable for any damages or injury incurred due to failure in following these instructions.
- Installation must comply with the National Electrical Code and any State or Local Codes or regulations.
- DO NOT** add any devices or accessories to this air conditioner except those specifically authorized by Dometic.
- 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" (±1/8") opening.

B. OTHER LOCATIONS

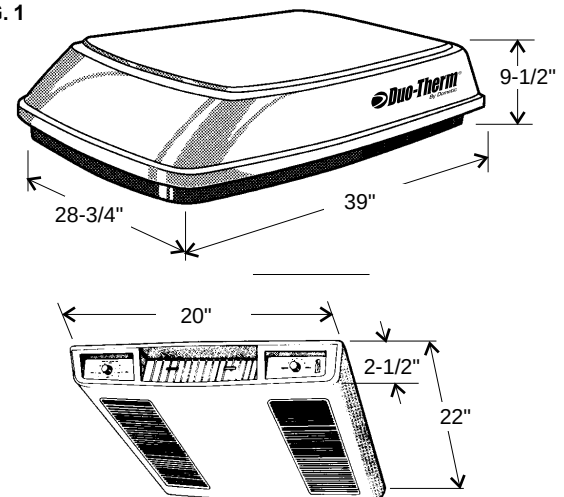
When no roof vent is available or another location is desired, the following is recommended:

- 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 6

FIG. 1



C. AFTER LOCATION HAS BEEN SELECTED:

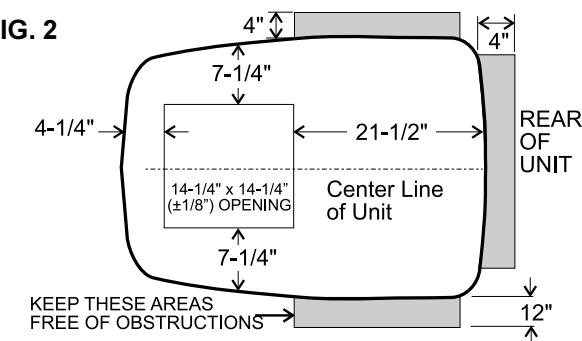
1. Check for obstructions in the area where air conditioner will be installed.
2. The roof must be designed to support 130 pounds when the RV is in motion. Normally a 200 lb. static load design will meet this requirement.

⚠ CAUTION

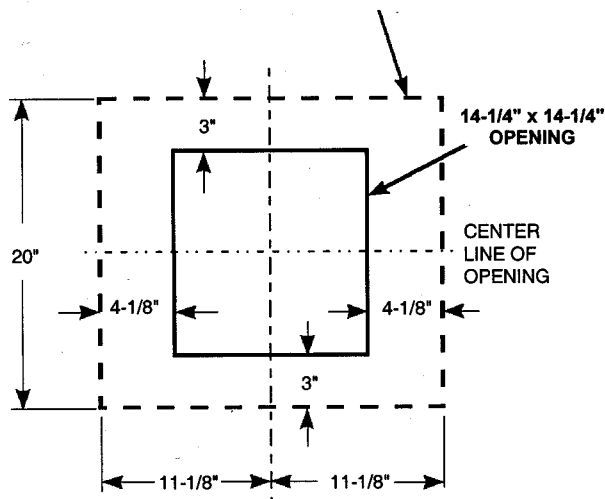
It is the responsibility of the installer of this air conditioner system to ensure structural integrity of the RV roof. Never create a low spot on the roof where water will collect. Water standing around the air conditioner may leak into the interior causing damage to the product and the RV.

3. Check inside the RV for air box obstructions (i.e. door openings, room dividers, curtains, ceiling fixtures, etc.)

FIG. 2



AIR BOX PERIMETER



3. ROOF PREPARATION

Before preparing the ceiling opening, the type of system options must be decided upon. If a remote sensor is to be used, provision must be made for it. If the load shed option is to be used, wires must be run from the load shed control to the Dometic A/C. If a furnace is to be connected, wires must be run from the furnace to the Dometic A/C. Read all of the following instructions before beginning the installation.

⚠ WARNING

There may be electrical wiring between the roof and the ceiling. Disconnect 115 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. ROOF VENT REMOVAL

1. Unscrew and remove the roof vent
2. Remove all caulking compound around opening.
3. Seal all screw holes and seams where the roof gasket is located. Use a good grade of all weather sealant.

B. NEW OPENING

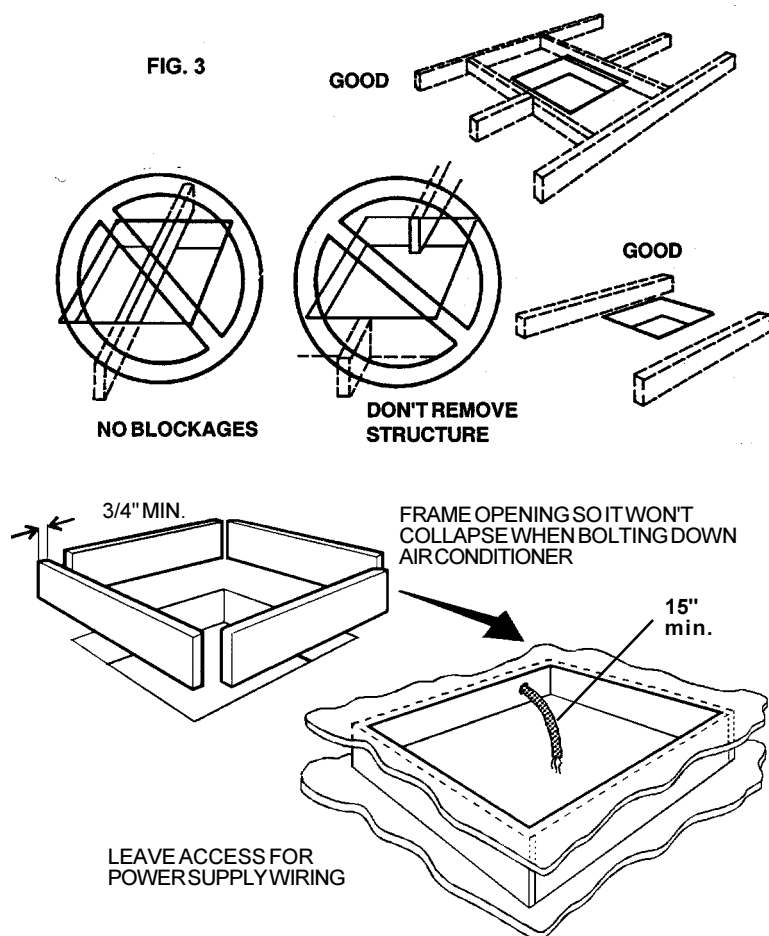
(Installation Other Than Vent Opening)

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

C. 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, 115 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" (±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.

FIG. 3



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, furnace wiring, 4-conductor telephone cable, remote sensing and load shed (Energy Management System) options as desired.

⚠ 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.

5. The 14-1/4" x 14-1/4" (±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.
6. 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" (±1/8") opening.
 - b. Make sure that at least 15" of supply wire extends into the roof opening.
 - c. **In a multiple zone installation, this wiring is required in only one of the 14-1/4" (±1/8") openings.**

7. If a Remote Temperature Sensor is used, the connector end must be routed to the roof opening of the system which it will control. Make sure that at least 15" of the sensor cable extends into the roof opening. Refer to the Remote Sensor Instructions for details of the installation.
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.
9. 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 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 wires extend into the roof opening.
10. Route a 4-conductor telephone cable from the **Comfort Control Center™** mounting position into the 14-1/4" (±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™**.
11. In the event that other Air Conditioners are installed (additional zones) an additional 4-conductor telephone cable must be routed to the other Air Conditioners. Make sure that at least 15" of the wire extends into the roof opening. (See Fig. 17)

4. DOMETIC COMFORT CONTROL CENTER™ & CABLE INSTALLATION

A. LOCATION

1. If the system is to be used **WITHOUT** a **Remote Temperature Sensor**, the proper location of the **Comfort Control Center™** is very important to ensure that it will provide a comfortable RV temperature. Observe the following rules when selecting a location:
 - a. Locate the **Comfort Control Center™** 54" above the floor.
 - b. Install the **Comfort Control Center™** 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.
2. If the system is to be used **WITH** a **Remote Temperature Sensor** in **ALL** zones, the comfort control Center may be mounted anywhere that is convenient in the coach. Try to avoid hard to reach and hard to see areas.
 - a. Refer to the instructions provided with the **Remove Temperature Sensor** for details of installation.

3. A 3/8" diameter hole will be needed to route the cable through the wall.

B. CONTROL CABLE INSTALLATION

A 4-conductor telephone cable must be routed from the roof opening to the **Comfort Control Center™**.

1. Choose the shortest, most direct route from the 14-1/4" (±1/8") opening to the **Comfort Control Center™** location selected. Leave 6" of cable extending through the wall.
2. The cable that should be used is a flat, 4-conductor telephone cable.
3. The cable must be terminated with a telephone RJ-11 connector. Refer to the crimp tool manufacturer for crimping instructions. Ensure that the cable is installed into the connector correctly before crimping. (See FIG. 4).

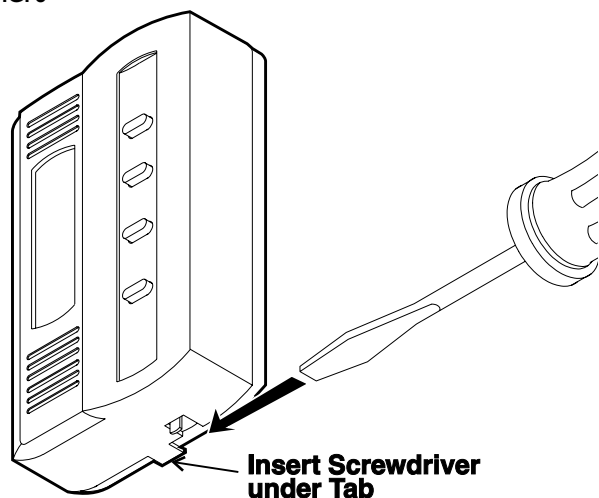
FIG. 4



C. COMFORT CONTROL CENTER™ INSTALLATION

1. Carefully remove the base plate from the **Comfort Control Center™**. This may be accomplished by inserting a small screwdriver under the tab on the bottom edge of the front cover and gently prying. (See FIG. 5).

FIG. 5



2. Insert the telephone cable through the hole in the base plate and mount the plate to the wall with the two screws provided. Check the alignment to ensure level installation.
3. Install the control cable RJ-11 connector into the back of the **Comfort Control Center™** and gently press onto the base plate.

5. PLACING THE AIR CONDITIONER ON THE ROOF

- A. Remove the Air Conditioner from the carton and discard.
- B. Place the Air Conditioner on the roof.

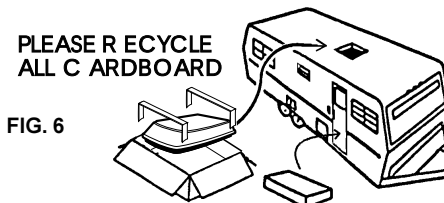


FIG. 6

⚠ CAUTION

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

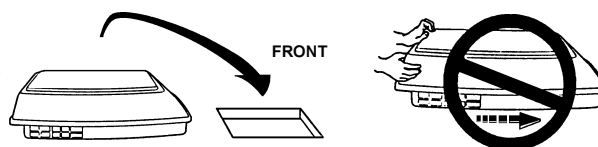
- C. Lift and place the unit over the prepared opening using the gasket on unit as a guide. The **blunt end** goes toward the **rear** of the RV.

⚠ CAUTION

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

- D. Place the 3106615 Air Box Kit inside the RV. This box contains mounting hardware for the air conditioner and will be used inside the RV.

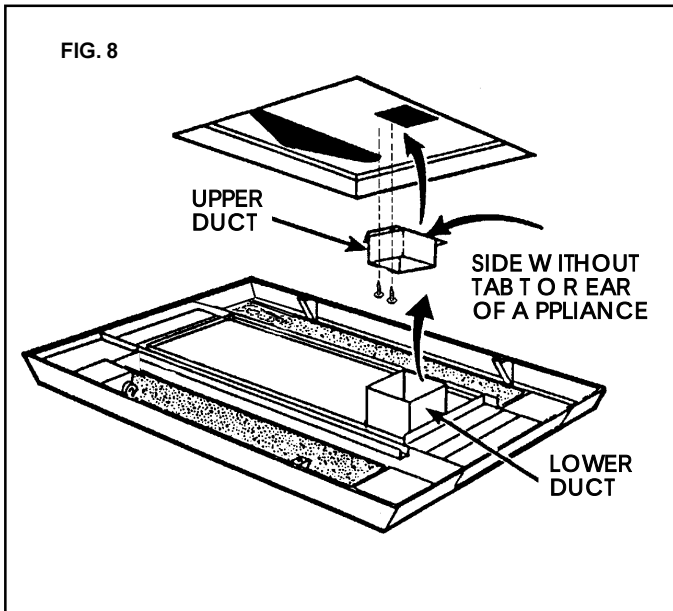
FIG. 7



This completes the outside work. Minor adjustments can be done from the inside of the RV if required.

6. DISCHARGE DUCT & CEILING TEMPLATE INSTALLATION

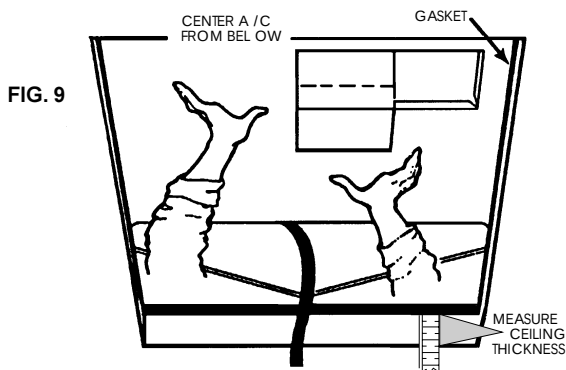
- A. Remove the air box and mounting hardware from their carton. The upper duct is shipped inside the lower duct which is part of the ceiling template.



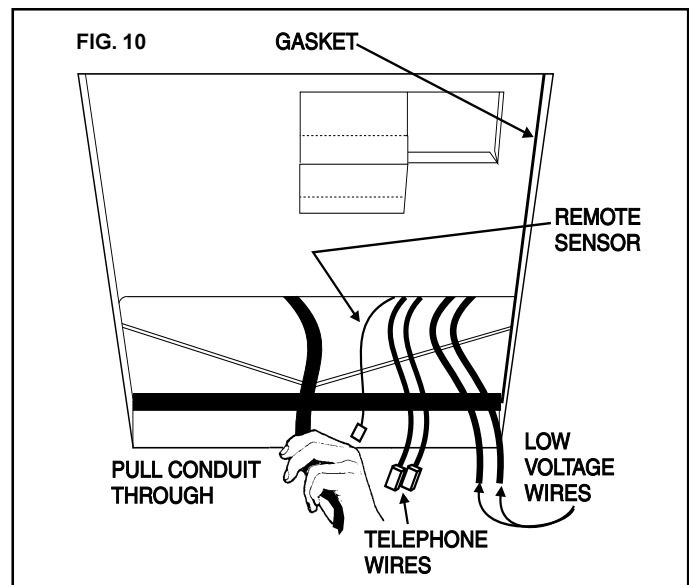
1. Remove the upper duct from the ceiling template and locate it over the blower discharge.

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

2. Use two (2) #10 x 3/8" screws (c) to hold the duct to the base pan. The holes are prepunched in the pan for each location.

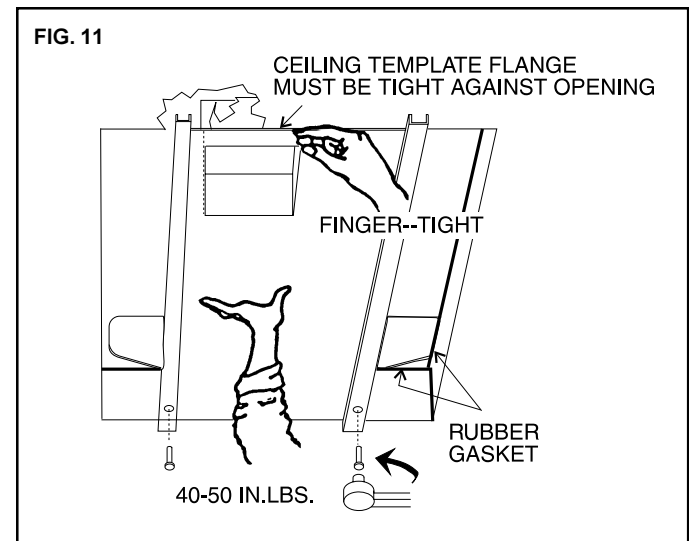


- B. Check gasket alignment over roof opening and adjust if necessary. Roof gasket centers over 14-1/4" ($\pm 1/8$ ") opening.
- C. Reach up into the return air opening and pull the conduit power cable down for later connection. Pull the low voltage wire, telephone cables and remote sensor extension cable down for later connection.
- D. 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 4-1/4" install ducts as received.



3. If the distance is 4-1/4" to 6" (maximum thickness), optional duct and bolt kits are available:
Duct (Part No. 318556.000)
Bolts (Part No. 3100895.006)

- E. Take the ceiling template and slide the lower duct over the upper duct.



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

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.

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. Route **Remote Temperature Sensor** cable, if applicable, and attach it to the connector that matches its color protruding from the return air opening.
2. Connect the previously run 12 VDC to the red and black wires protruding from the return air opening. (In multiple zone installations, this needs to be done at only one zone.) Connect +12 VDC to the red wire; -12 VDC to the black wire.
3. 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.
4. 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.
5. Terminate the 4-conductor telephone cable(s) protruding into the 14-1/4" ($\pm 1/8$ ") roof opening. The cable(s) must be terminated with a telephone RJ-11 connector. Refer to the crimp tool manufacturer for crimping instructions. Ensure that the cable is installed into the connector correctly before crimping. (See FIG. 4)
6. Plug the telephone cable(s) into the telephone jack(s) protruding from the return air opening. (It does not matter which one.)

B. CONNECTION OF 115 VOLT POWER SUPPLY

⚠ WARNING

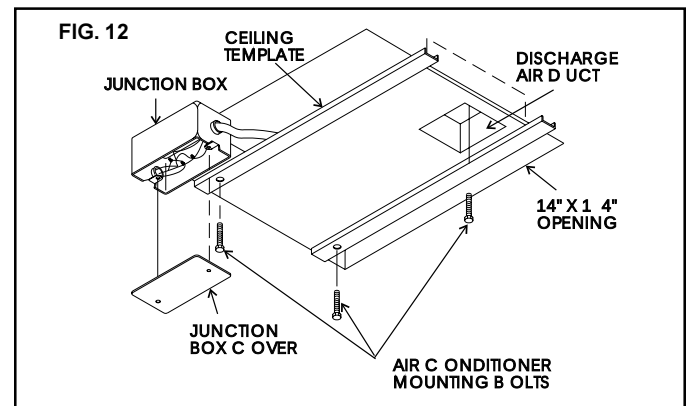
Disconnect 115 volt AC. Failure to follow these instructions could create a shock hazard causing death or severe personal injury.

1. Mount unit junction box to ceiling in the following location.
 - a. Locate the junction box near ceiling template. Locate opposite discharge duct end and on same side as discharge duct.
 - b. Center long side of junction box on center of mounting bolt.
 - c. Place edge of box approximately 1/2" from edge of ceiling template.
 - d. Attach junction box to ceiling of coach using two (2) #10 x 1/2" screws provided.
2. Route power supply line into junction box on side away from the ceiling template. Route line through strain relief.

⚠ 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 115 volt AC circuit and the polarity is correct. Failure to do so could result in death, personal injury or damage to the equipment.

3. Connect white to white; black to black; and green to green or bare copper wire using appropriate sized twist connectors.
4. Tape the connectors to the wire with electrician's tape.
5. Push the wires into the box and tighten the strain relief.
6. Install the cover onto the junction box.



8. SYSTEM CHECKOUT & CONFIGURATION

Now that the system is installed, it is necessary to check all operations and then configure the electronics.

If the installation is a single zone, no adjustments to the dip switches are necessary.

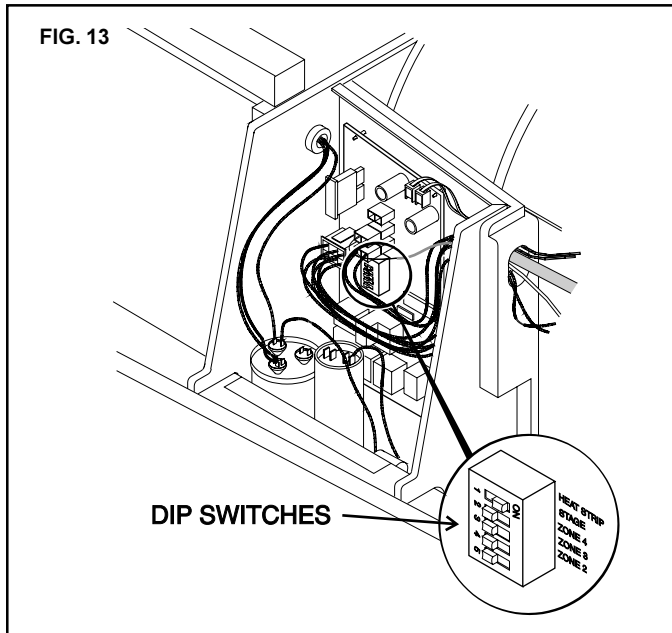
A. ELECTRONIC CONTROL CONFIGURATION

1. If there is more than one zone, the dip switch for each successive zone must be set. To gain access to the dip switches, the shroud must be removed from the unit. Remove the four mounting screws around the perimeter of the unit. Next remove the electrical box cover. (The electrical box will be on the curb side of the RV after installation).
2. Adjust the dip switches on the electronic control board to set the ZONE desired. (See FIG. 13, Page 9). Placing the switch in the ON position selects that ZONE.

Note: Dip switches are shipped from the factory in the "OFF" position.

3. Selection of ZONE 2 identifies this unit as ZONE 2; likewise, zone 3 and 4.
4. STAGE is not used on these units. Leave in the "OFF" position.

5. HEAT STRIP is placed to "ON" if an electric heat strip is installed. **(620315 Only)**
6. Replace the unit electrical box cover.
7. Replace the shroud.
8. Repeat this procedure for each additional zone.



B. SYSTEM CHECKOUT

Verify that all features of the installed system work. Check fan speeds, cooling mode, heat pump mode, furnace (if connected) and heat strip. If the features do not work, check all wiring and confirm that the correct options have been selected on the Electronic Control Board. See **Comfort Control Center™** Operating Instructions.

C. SYSTEM CONFIGURATION

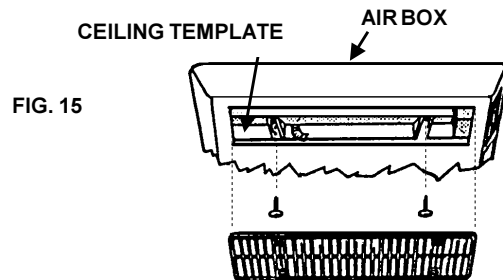
If all features are functioning, perform the following configuration procedure:

Simultaneously depress **UP** and **DN** pushbuttons on the **Comfort Control Center™** for one second. This completes the system configuration.

9. AIR BOX INSTALLATION

- A. Remove the two filter-grilles from the air box.
- B. Slide the air box over the ceiling template.
- C. Install the four (4) sharp pointed screws through the air box legs and into the prepunched 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.



- D. Install the filter-grilles by pushing them into place.

FIG. 16

ROOF MOUNT ASSEMBLY

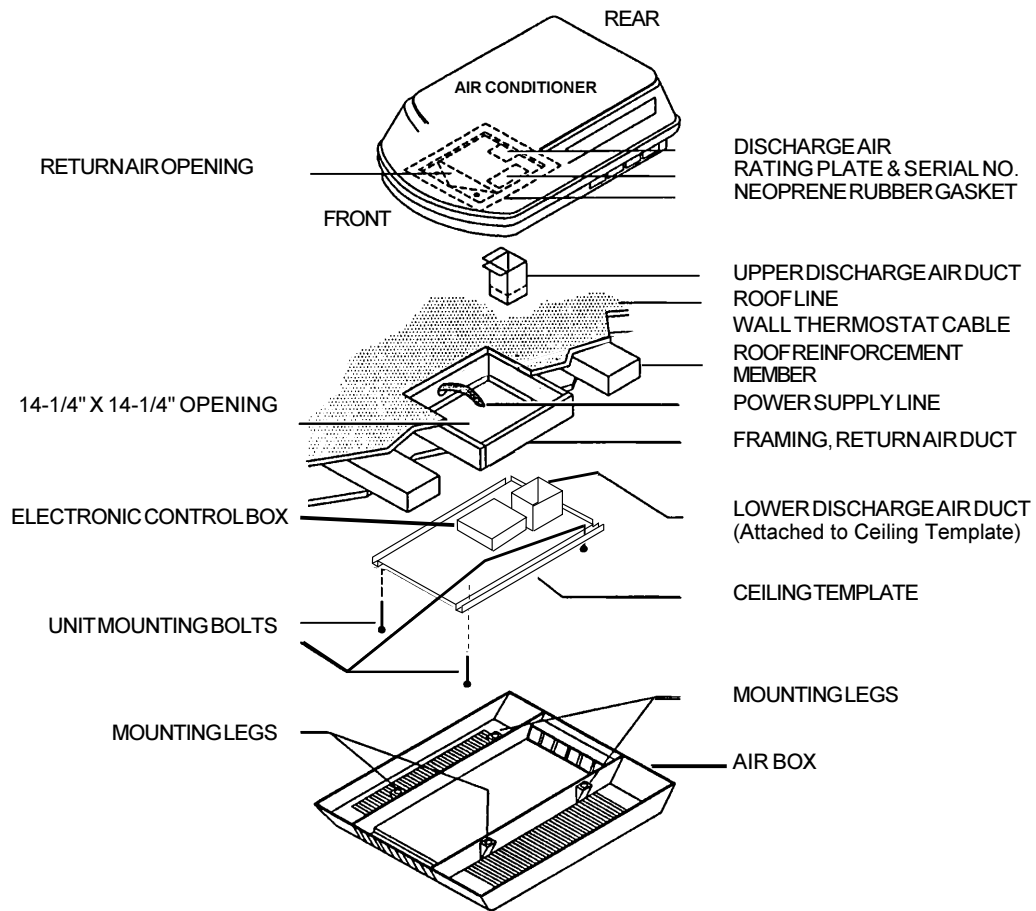
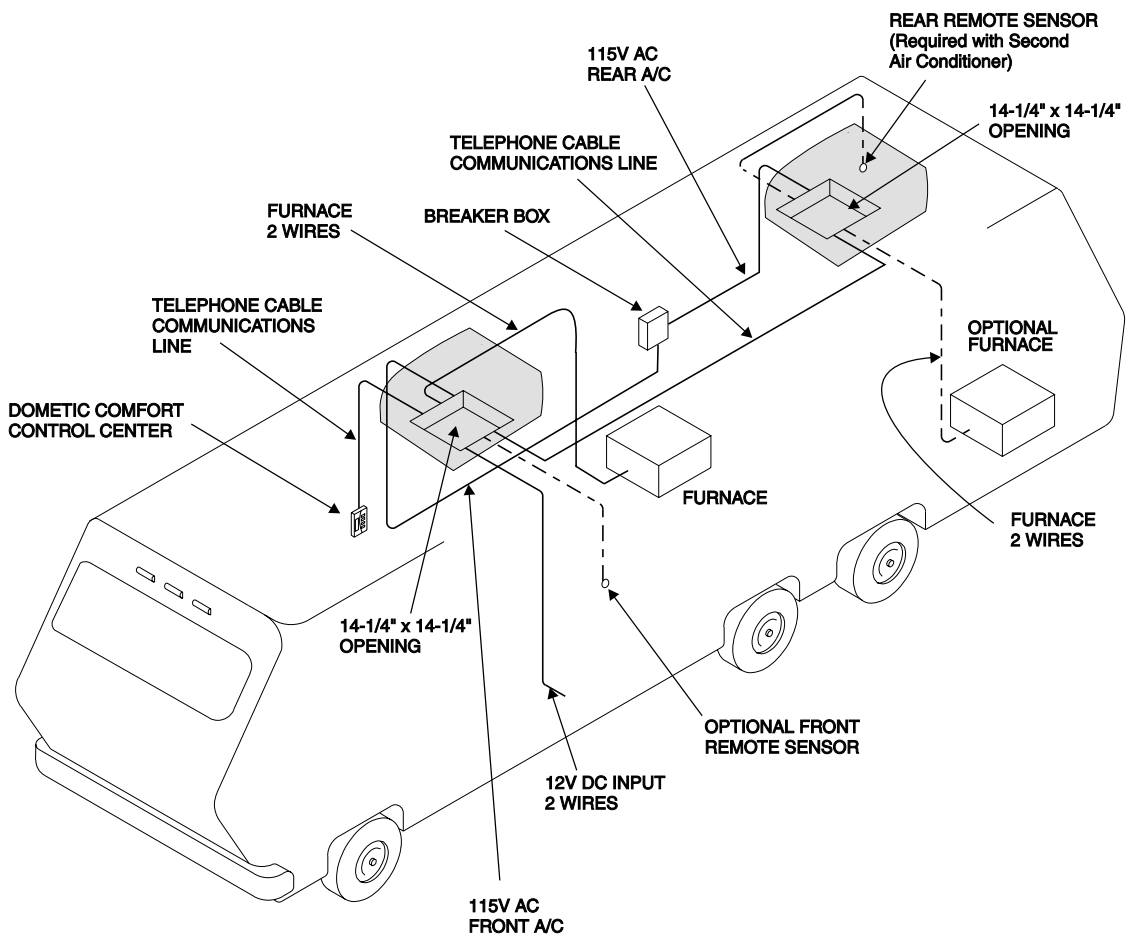
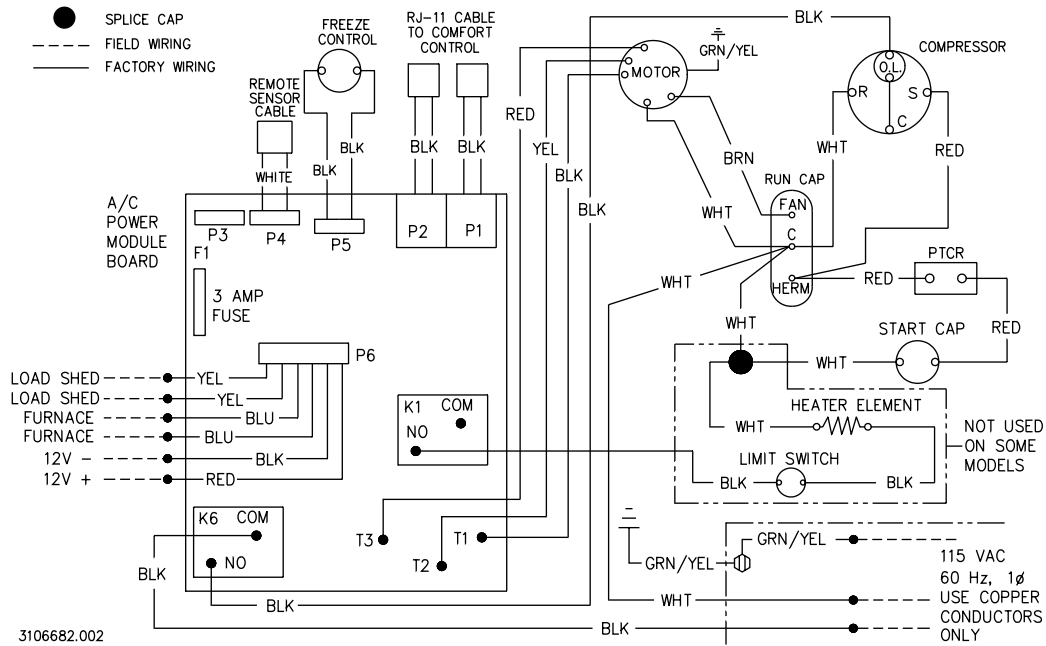


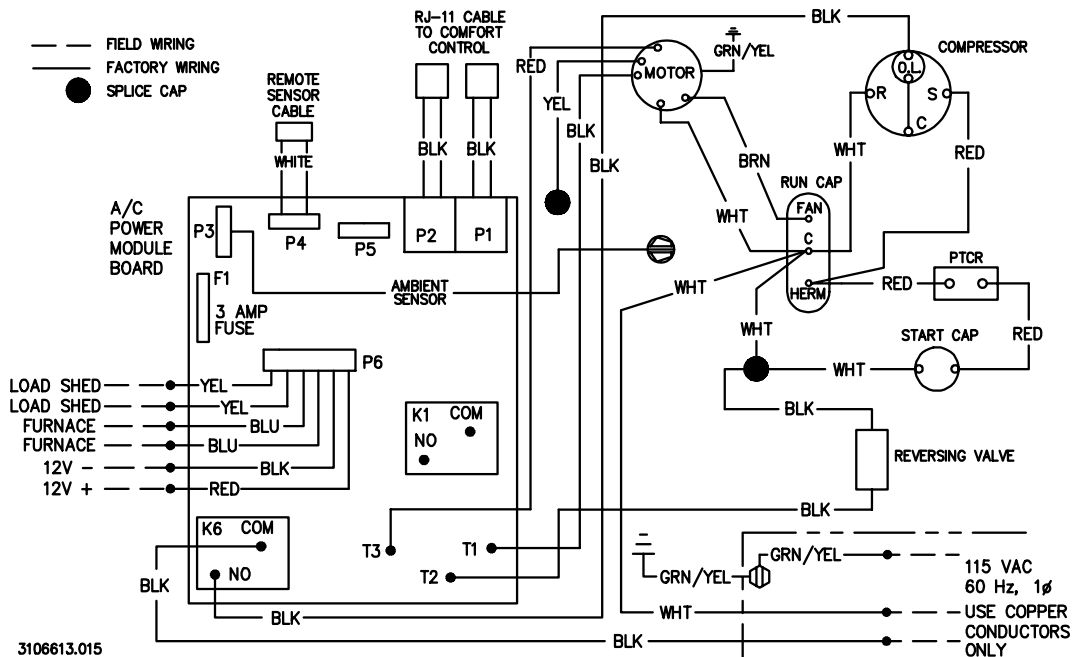
FIG. 17



WIRING DIAGRAM FOR MODELS 620315.321, 620315.421, 620325.321 & 620325.421

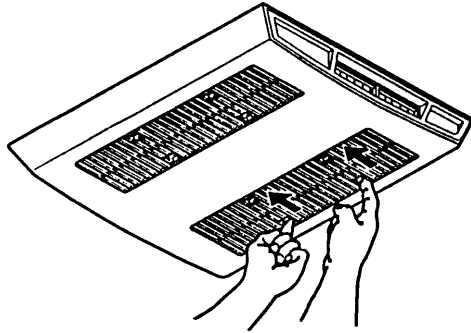


WIRING DIAGRAM FOR MODELS 630215.321 & 630215.421



10. MAINTENANCE

- A. AIR FILTERS:** Periodically remove and clean the filter/grille assemblies located in the air box. Remove the assemblies by placing fingers on the long portion of latches and with an over-and-downward pressure, unlatch the catches. After assemblies are removed, wash the filter/grille assemblies with soap and warm water. Let assemblies dry and then reinstall.



Note: Never run the air conditioner without return air filters in place. This may plug the unit evaporator coil with dirt and may substantially affect the performance of the unit.

- B. AIR BOX HOUSING:** Clean air box housing and control panel with a soft cloth dampened with a mild detergent. Never use furniture polish or abrasive cleaning materials.
- C. FAN MOTOR:** Factory lubricated and requires no service under normal use.
- D. FROST FORMATION ON COOLING COIL:** Under certain conditions, frost may form on the evaporator coil. If this should occur, inspect the filter and clean if dirty. Make sure air louvers are not obstructed. Air conditioners have a greater tendency to frost when the outside temperature is relatively low. This may be prevented by adjusting the thermostat slide to a warmer setting. Should frost continue, operate on **LOW, MED** or **HIGH FAN** setting until the cooling coil is free of frost.

11. SERVICE—Unit Does Not Operate

If your unit fails to operate or operates improperly, check the following before calling your service center:

- A.** If RV is connected to motor generator, check to be sure motor generator is running and producing power.
- B.** If RV is connected to power supply by a land line, check to be sure line is sized properly to run air conditioner load and it is plugged into power supply.
- C.** Check your fuse or circuit breaker to see if it is open.
- D.** After the above checks, call your local service center for further help. This unit must be serviced by qualified service personnel only.

When calling for service always give the following:

1. Air Conditioner Model and Serial number found on rating plate located on base pan of air conditioner bottom. Remove return air grille to observe this rating plate.
2. Air Distribution Box Kit Part and Serial Number found on rating plate located on ceiling template. Observe this rating plate through the discharge louver of the air distribution.