



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

SERVICE OFFICE

Dometic, LLC
For Information
Contact:
www.dometic.com

Roof Top Unit				
Description	Model	Type	Use With Return Air Cover	
			Model	Analog Control
Air Conditioner W/Electric Heat	B3200	3241	3105007.XXX OR 3105935.XXX	3310086.000 Cool-Furn-HS
Heat Pump	B3200	3242		3310137.000 Cool-Furn-HP

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.

INSTALLATION INSTRUCTIONS

Type

3241.301
3242.301

3313146.015

REVISION

Form No. 3313146.015 5/10
(Replaces 3313146.000)
©2010 Dometic, LLC
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 Caravan during the time the Caravan is manufactured.
 - 2. Mounting on the roof of a Caravan.
 - 3. Roof construction with rafters/joists support frames on minimum of 406 mm centers.
 - 4. Minimum of 51 mm and maximum of 140 mm distance between roof to ceiling of Caravan.

C. Basic Reuirements

- 1. Installation opening. Cut through the roof and ceiling.
 - 2. 220-240 VAC, 50 Hz. 10 Amp.
 - 3. Power when the unit starts must be above 198 VAC and the frequency must be 50 Hz at all times.
- D. The ability of the air conditioner to maintain the desired inside temperature depends on the heat gain of the Caravan.
- Some preventative measures taken by the occupants of the Caravan can reduce the heat gain and improve the ability of the air conditioner to cool the Caravan. During extremely high outdoor temperatures, the heat gain of the Caravan may be reduced by:
- 1. Parking the Caravan 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 Dometic outdoor patio and window awning will reduce heat gain by removing the direct sun. They also add a nice area to enjoy company during the cool of the evening.

E. 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 Caravan, 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

Type	3241	3242	
A/C OR H/P	A/C	H/P	
Nominal Cooling Capacity (KW)	3.0	3.0	
Electric Heat Capacity (KW)	1.6	N/A	
Electrical Rating	220 - 240 VAC 50 Hz., 1 Ph		
Full Load Amps (Compressor / Motor)	5.46 / .92	5.46 / .92	
Locked Rotor Amps (Comp / Motor)	27 / 2.3	27 / 2.3	
Power (KW) Compressor + Motor	1.34	1.33	
Power (KW) Heater	1.5	N/A	
Refrigerant R410A Grams / Oz.	525 / 18.5	695 / 24.5	
Minimum Wire Size	Up to 8 meters use 1.5 mm ² , Copper. Consult Regulatory Codes.		
Circuit Protection	10 Amp Time Delay Fuse, or Circuit Breaker		
* Generator Size	1 Unit - 3.5 KW 2 Unit - 5.0 KW		

*The manufacturer 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 Caravan must be considered. Keep in mind generators lose power at high altitudes and from lack of maintenance.

INSTALLATION INSTRUCTIONS

A. Precautions



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

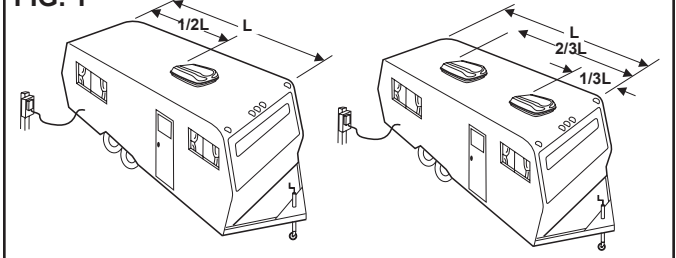
1. Read Installation and Operating Instructions carefully before attempting to start this unit installation.
2. The manufacturer will not be liable for any damages or injury incurred due to failure in following these instructions.
3. The equipment shall be installed in accordance with national wiring regulation per **IEC 335-2-40, CI, 7.12.1**. Installation must comply with all applicable codes and/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 localities 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 Caravan. When determining your cooling requirements, the following should be considered:

- Size of Caravan;
- Window area (increases heat gain);
- Amount of insulation in walls and roof;
- Geographical location where the Caravan 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 Caravan and centered from side to side.

FIG. 1

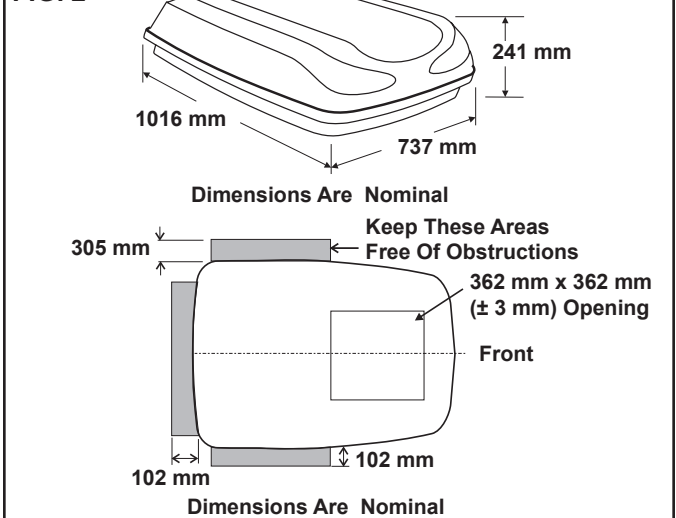


It is preferred that the unit be installed on a relatively **flat and level** roof section measured with the Caravan parked on a level surface, but up to a 8° tilt is acceptable.

3. After Location Has Been Selected:

- a. Check for obstructions in the area where unit will be installed. See FIG. 2.

FIG. 2



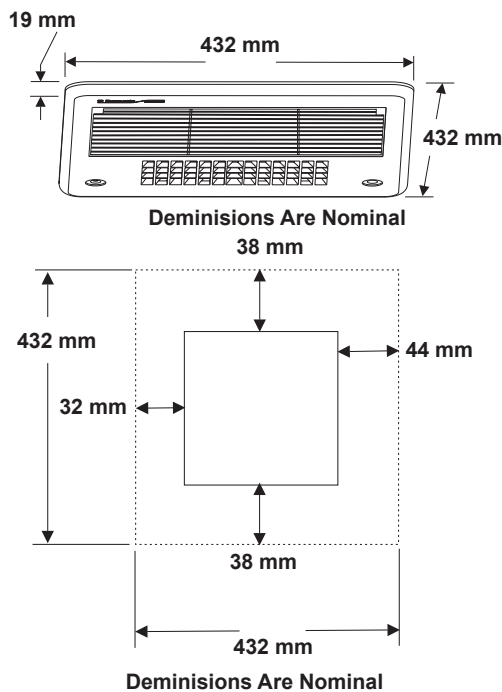
- b. The roof must be designed to support 60 Kg. when the Caravan is in motion. Normally a 90 Kg. static load design will meet this requirement.

CAUTION

It is the responsibility of the installer of this system to ensure structural integrity of the Caravan 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 Caravan.

- c. Check inside the Caravan for return air grill obstructions (i.e. door openings, room dividers, curtains, ceiling fixtures, etc.) See FIG. 3.

FIG. 3



C. Roof Preparation

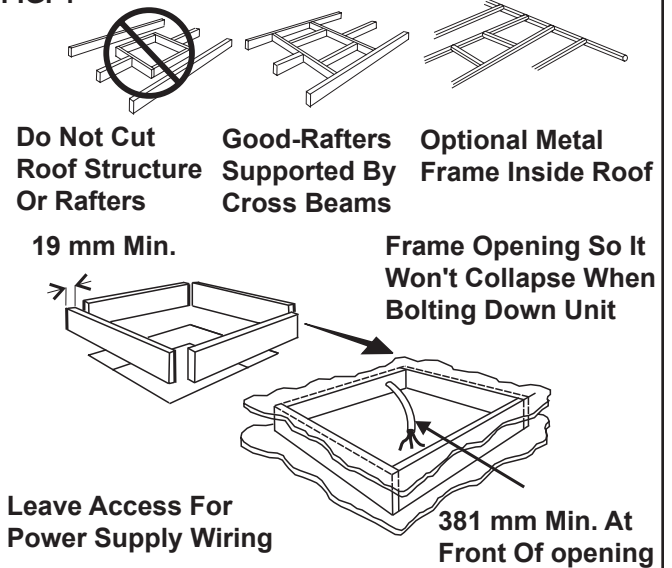
1. Opening Requirements - Before preparing the ceiling opening, the type of system options must be decided upon. Read all of the following instructions before beginning the installation.

! WARNING

There may be electrical wiring between the roof and the ceiling. Disconnect 220 - 240 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 362 mm x 362 mm (± 3 mm) square on the roof and carefully cut the opening.
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. Framing stock 19 mm or more in thickness must be used.
Remember to provide an entrance hole for power supplies, control cable, and furnace wiring (if applicable).

FIG. 4



CAUTION

It is the responsibility of the installer of this system to ensure structural integrity of the Caravan 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 Caravan.

D. Air Distribution Duct System Sizing & Design (See Chart On This page)

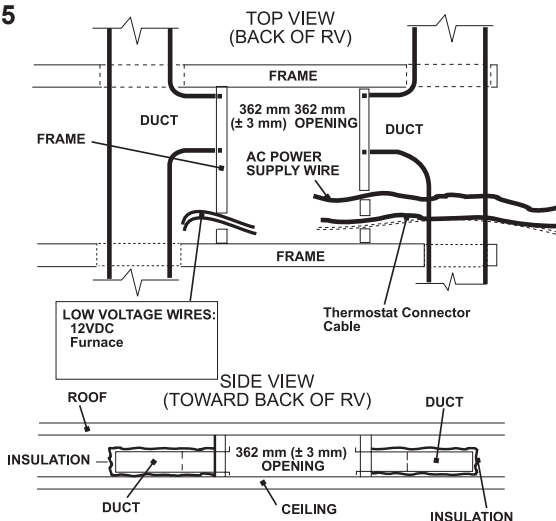
CAUTION

It is the responsibility of the installer to insure the duct work will not collapse or bend during and after the installation. Dometic, LLC will not be liable for roof structural or ceiling damage due to improperly insulated, sealed or collapsed duct work.

The Installer of this system must design the air distribution system for their particular application. Several requirements for this system **MUST** be met for the unit to operate properly. These requirements are as follows:

1. All discharge air ducts must be properly insulated to prevent condensation from forming on their surfaces or adjacent surfaces during operation of the unit. This insulation must be R-7 minimum.

FIG. 5



2. Ducts and their joints must be sealed to prevent condensation from forming on adjacent surfaces during operation of the unit.
3. Return air openings must have 260 cm² minimum free area including the filter.
4. Return air to the unit must be filtered to prevent dirt accumulation on unit cooling surface.
5. Air Distribution System Installation
 - a. Dometic, LLC recommends the basic configuration shown on page 6, for installing this system. We have found by testing, that this configuration works best in most applications of this system. It is the responsibility of the installer of this system to review each Caravan floor plan and determine the following:

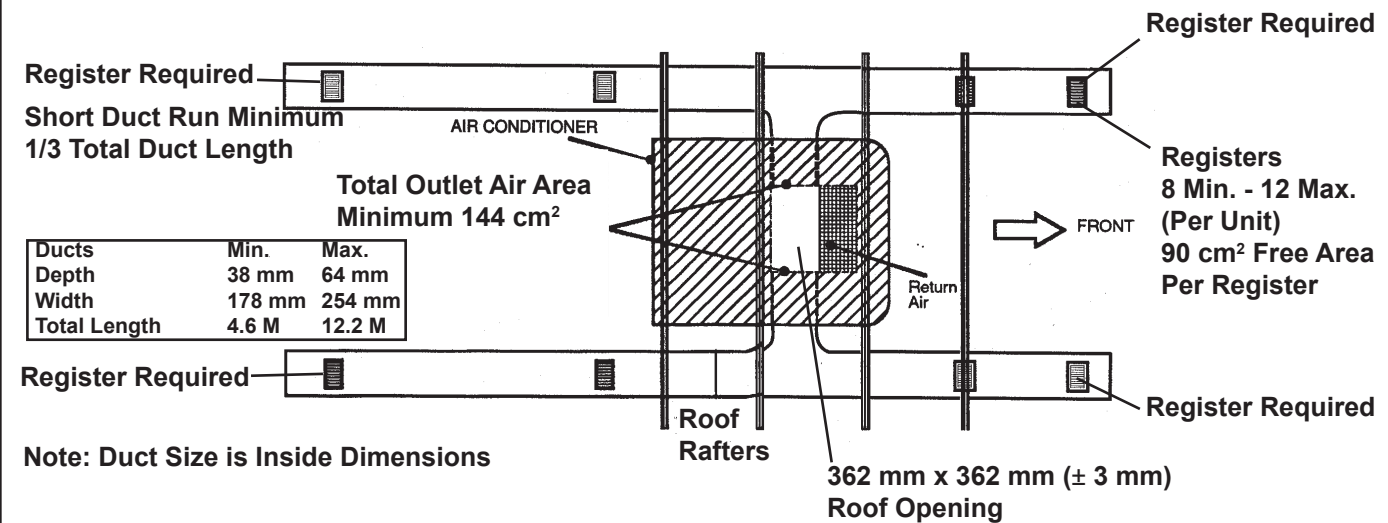
- Duct size
- Duct layout
- Register size
- Register location
- Thermostat location

These items must be determined in conjunction with the Air Distribution Duct System Sizing and Design Requirements listed in the chart below. Terminate the start of the duct at the back edge of the 362 mm x 362 mm (± 3 mm) opening. See FIGS. 5 & 6.

Important: Alternate configurations and methods may be used which still allow the unit to operate properly; however, these alternate configurations and methods must be approved by Dometic, LLC in writing. The following instructions are based upon the use of Return Air Grill Kits 3105007.XXX & 3105935.XXX

Air Distribution Duct Sizing & Design Chart For Ducted Applications	
Return Air Cover Model	3105007.XXX 3105935.XXX
Roof Cavity Depth	51 mm Min. - 140 mm Max.
Duct Cross Section Area (inside)	144 cm ² Min.
Duct Size Depth Width Total Duct Length Duct Length (short run)	38 mm Min. - 64 mm Max. 178 mm Min. - 254 mm Max. 4.6 M Min. - 12.2 M Max. 1/3 Min. Of Total Duct Length
Register Requirements Number Required Per Run Free Air Area Per Register Distance From Duct End Distance From Elbow	2 Min. 90 cm ² Min. 127 mm Min. - 203 Max. 381 mm
Total System Static Air Pressure Blower At High Speed, Filter & Grill In Place	30 - 160 Pascal
Note: Duct sizes listed are inside dimensions	

FIG. 6 Duct Size And Requirements For 3105007.XXX And 3105935.XXX Return Air Grill



E. Wiring Requirements

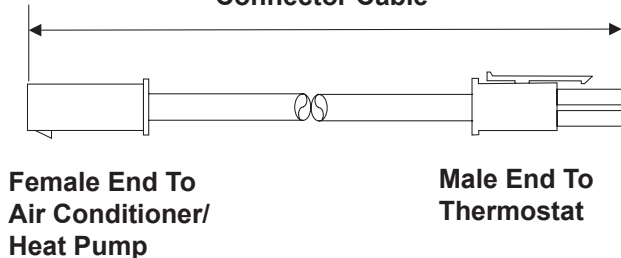
1. Route a copper, with ground, 220 - 240 VAC supply wire from the time delay fuse or circuit breaker box to the roof opening. The proper size wire can be determined from chart on page 3.
 - a. This supply wire must be located in the front portion of the 362 mm x 362 mm (± 3 mm) opening.
 - b. The power **MUST** be on an appropriately sized separate time delay fuse or circuit breaker. The proper size protection can be determined from the chart on page 3.
 - c. Make sure at least 381 mm of supply wire extends into the roof opening. This insures an easy connection at the analog control junction box.
 - d. Wiring methods must comply with all national and local wiring codes and/or regulations.
 - e. Protect the wire where it passes into the opening with approved method. See paragraph "d" above.

Note: These power supply connections may be replaced with type Y attachments if done by qualified personal.

2. Route a dedicated 12 VDC supply wire (.50 mm²) from the Caravans converter (filtered side) or battery to the roof opening.
 - a. This supply wire must be located in the front portion of the 362 mm x 362 mm (± 3 mm) opening.
 - b. Make sure that at least 381 mm of supply wire extends into the roof opening.
3. Route the 5 M supplied connector cable from the analog thermostat mounting position into the 362 mm x 362 mm (± 3 mm) roof opening. Review section F "Choosing Thermostat Location" and Section G "Thermostat & Connector Cable Installation" before routing connector cable. The male end of this connector cable goes to the thermostat. The female end goes to the roof opening. See FIG. 7. Make sure that at least 381 mm of the wire extends into the roof opening and 100 mm extends from the wall at the mounting position of the analog thermostat.

FIG. 7

5 M Thermostat Connector Cable



4. If system includes a gas furnace, route two thermostat wires from the furnace to the roof opening. Make sure that 381 mm of wire extends into the opening.

F. Choosing Thermostat Location

1. Analog Thermostat

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

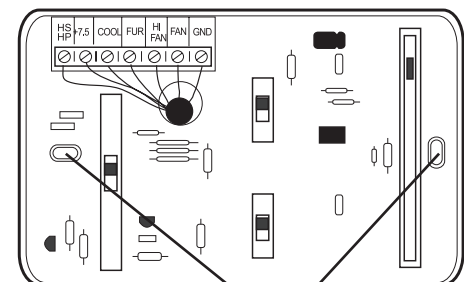
- a. Locate the thermostat 137 cm above the floor.
- b. Install the thermostat on a partition, not on an outside wall.
- c. **NEVER** expose the thermostat to direct heat from lamps, sun or other heat producing items.
- d. Avoid locations close to doors that lead outside, windows or adjoining outside walls.
- e. Avoid locations close to supply registers and the air from them.
- f. A 25 mm hole will be needed to route the cable through the wall.

G. Thermostat & Connector Cable Installation

1. Analog Thermostat Installation

- a. Connect the previously run 5 M connector cable protruding from the wall to the prewired thermostat cable connection.
- b. Gently push the two connectors together until a snap is heard and the lock on the male connector is latched on the female connector.
- c. Gently feed the connectors through the hole in the wall until the thermostat can mount flush.
- d. Remove the cover from the thermostat by starting at one corner and lifting it off the base.
- e. Mount the thermostat level on the wall using the screws provided in the location shown in figure 8.

FIG. 8



Screw Locations

- f. Place the cover on the thermostat and push until an audible click is heard.

H. Placing Unit On The Roof

⚠ WARNING

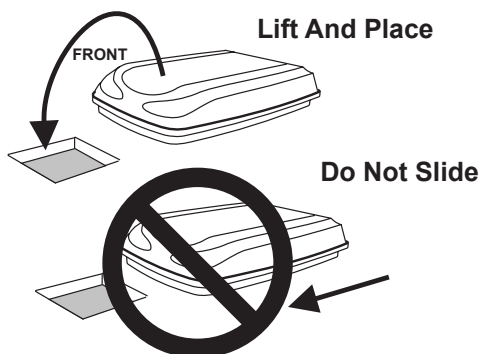
Personal injury hazard. This unit weighs approximately 45 kilograms. To prevent back injury, use a mechanical hoist to place unit on roof. Failure to heed this warning could cause severe personal injury.

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. 9.

CAUTION

Property damage hazard. Do not slide the unit. Failure to heed this warning may damage the neoprene gasket attached to the bottom and create a leaky installation.

FIG. 9

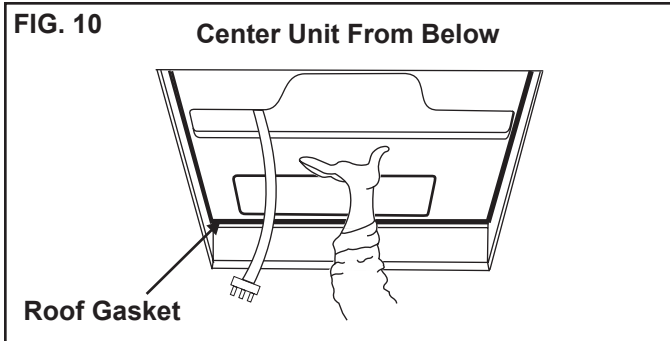


4. Place the return air grill kit inside the Caravan. This box contains mounting hardware for the unit and will be used inside the Caravan.

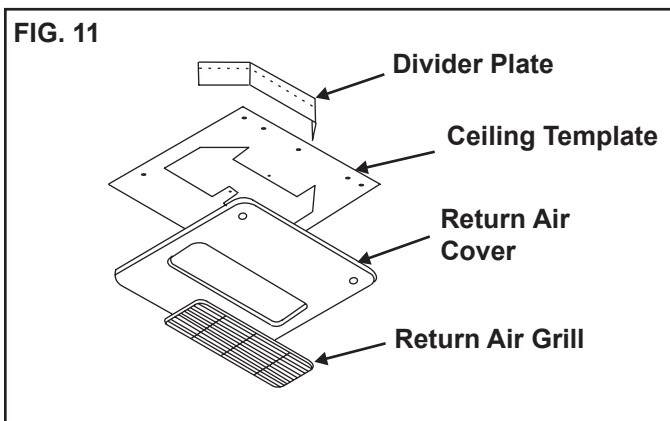
This completes the outside work. Minor adjustments can be done from the inside of the Caravan if required.

I. Installing The Unit

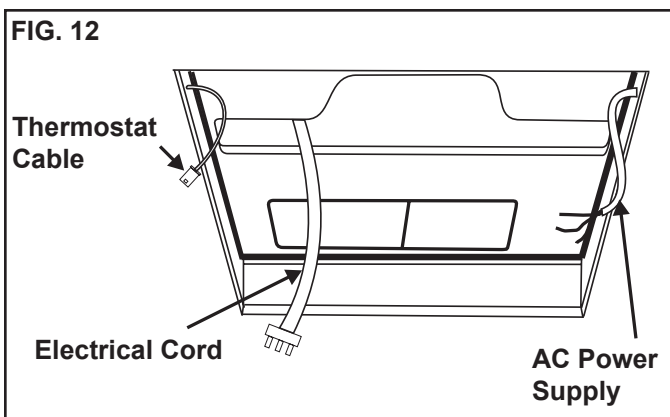
1. Check gasket alignment of the unit over the roof opening and adjust if necessary. Unit may be moved from below by slightly lifting. See FIG. 10.



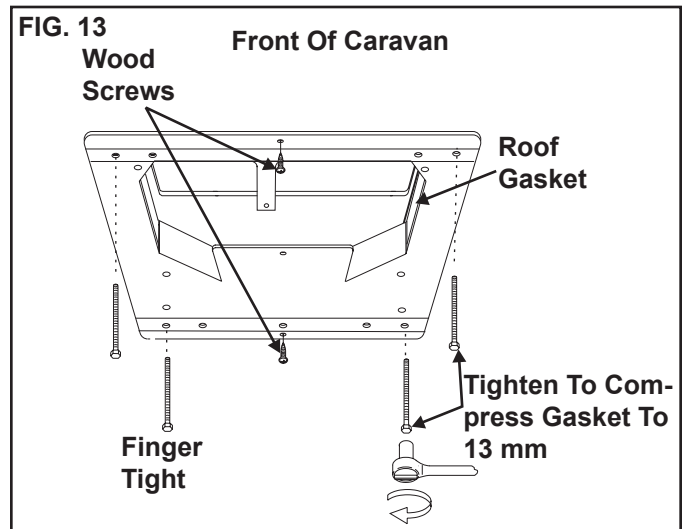
2. Remove return air cover and ceiling template from carton.



3. All models listed in this manual will use a four (4) bolt pattern for installing the return air cover kit. These bolts are furnished in the analog control kit.
4. Reach up into the return air opening and pull the unit electrical cord down.



5. Hold the ceiling template up to the 362 mm x 362 mm (± 3 mm) opening. Be sure the large plate faces the rear of the Caravan.
6. Start each mounting bolt through the ceiling template and up into the unit base pan by hand. Install wood screw in each end of the ceiling template. This insures a tight fit of the return air cover to ceiling. See FIG. 13.

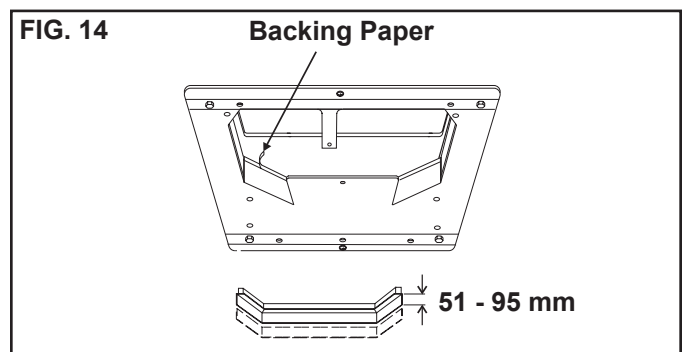


7. Evenly tighten the four mounting bolts to a torque of 4.5 to 5.6 NM. This will compress the roof gasket approximately 13 mm. The bolts are self locking so further tightening is not necessary. See FIG. 13.

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.

8. Installation of Divider Plate
 - a. Measure the ceiling to roof thickness:
 - i. If distance is 51 mm - 95 mm, remove perforated tab from divider plate.
 - ii. If distance is 95 mm - 140 mm, remove no tabs.
 - b. Remove the backing paper from double sided tape located on ceiling template. See FIG. 14.

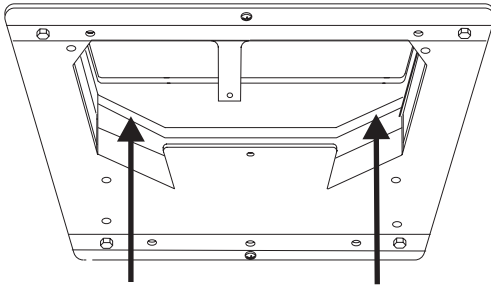


- c. Place divider plate up to bottom of the unit base pan firmly. The foam tape on the divider plate must seal to bottom of base pan. See FIG. 15.

CAUTION

Improper installation and sealing of divider plate will cause the compressor to quick cycle on the cold control. This may result in fuse or circuit breaker opening and/or lack of cooling.

FIG. 15



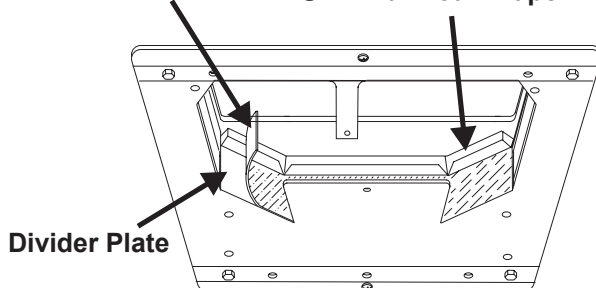
**Push Divider Plate Firmly
Onto Base Pan**

Note: The adhesive on the insulation is extremely sticky. Be sure the part is located where desired before pressing into place.

- d. With slight pressure push the divider plate against the double sided tape on the ceiling template.
- e. Locate the 3 mm x 178 mm x 457 mm self adhesive insulation supplied with the return air kit. Remove the backing paper from the insulation and carefully stick onto the ceiling template divider panel. See FIG. 16.

FIG. 16

**Place Insulation In Position
(Do Not Cover Unit Rating Plate)**

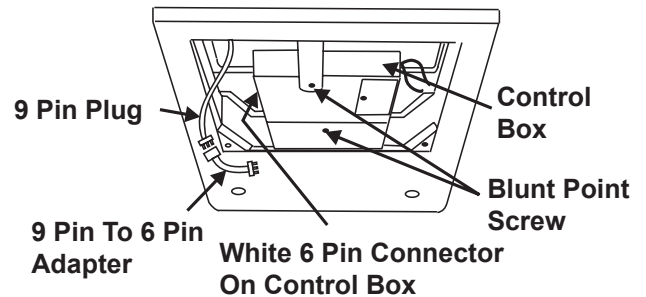


- i. Excess width is intended to seal the divider plate to the sides of the 362 mm x 362 mm (± 3 mm) opening. This is to help prevent cold air discharge from circulating into the unit return air opening.
 - ii. If the insulation is too high, stick excess height of insulation to the unit base pan. Do not cover up unit rating plate.
- f. Place the analog control box on the ceiling template with the white 6 pin connector plug on the side as shown in FIG. 17.

- g. Connect the 9 pin plug from the unit to the 9 pin plug on the adapter cable, and the 6 pin to the control box. The plugs are polarized and will fit only one way. See FIG. 17.

FIG. 17

Front Of Caravan



- h. Place the cold control (3310086.XXX only) switch up through the base pan and on the second refrigerant tube from the bottom in the center of the evaporator coil. See FIGS. 18 & 19. Make sure the spring clip is fastened securely to the tubing and the cold control surface is making contact with the aluminum fins on the evaporator coil.

FIG. 18

**Place Cold
Control In
Center On
2nd Tube
From
Bottom**

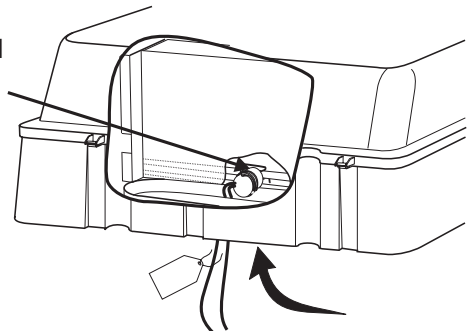
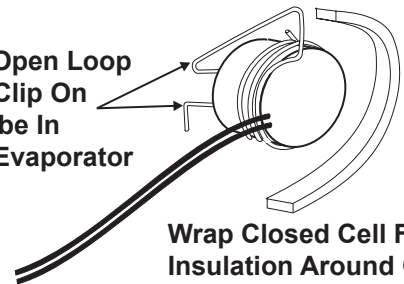


FIG. 19

**Snap The Open Loop
Of Spring Clip On
Second Tube In
Center Of Evaporator
Coil**

**Wrap Closed Cell Foam
Insulation Around Cold
Control Switch.**



- i. Keep wires away from heat strip (if applicable) and sharp edges to prevent damaging wires. Use wire ties if necessary.
 - ii. Remove installation notice hang tag from freeze control.
- i. Install the 10 mm blunt point screws provided through the ceiling template and into the holes in the control box. See FIG. 17.

J. Wiring The System

CAUTION

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

Locate the 7 pin connector and loose wires from the analog control box.

1. Low Voltage Wire Connections
 - a. Connect the previously run 12 VDC wires to the red and black wires from the analog control box. Connect the +12 VDC to the red wire and the -12 VDC to the black wire.
 - b. Connect the previously run furnace thermostat wires (if applicable) to the blue/white wires from the analog control box. The polarity of these connections does not matter.
 - c. Connect the thermostat connector cable into the mating connector from the analog control box.
2. 220 - 240 VAC Power Supply Connection

⚠ WARNING

Disconnect 220 - 240 VAC. Failure to follow these instructions could create a shock hazard causing death or severe personal injury.

⚠ WARNING

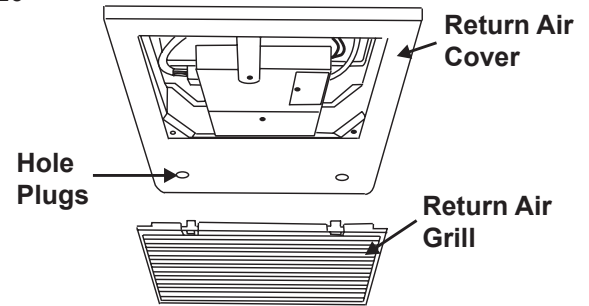
This product is equipped with a 3 wire (grounded) system for protection against shock hazard. Make sure that the unit is wired into a properly grounded 220 - 240 VAC circuit and the polarity is correct. Failure to do so could result in death, personal injury or damage to the equipment.

- a. Route the power supply line through the strain relief and into the electrical junction box. Tighten strain relief being careful not to damage wires.
- b. Connect active to red, neutral to black, and green/yellow to ground wire using appropriate size wire connectors.
- c. Tape the wire connectors to the supply line to assure they don't vibrate off.
- d. Push the wires back into the electrical junction box.
- e. Install electrical junction box cover.

K. Installing Decorative Inside Cover

1. Remove the return air grill from the return air cover.
2. Place the return air cover up to the ceiling template.
3. Install cover to template with #8 x 10 mm blunt point Phillips head screws provided (6 required).
4. Reinstall filter return air grill into return air cover. Align tabs with mating notches and snap into place.
5. Install two hole plugs into screw holes in back of return air cover. See FIG. 20.

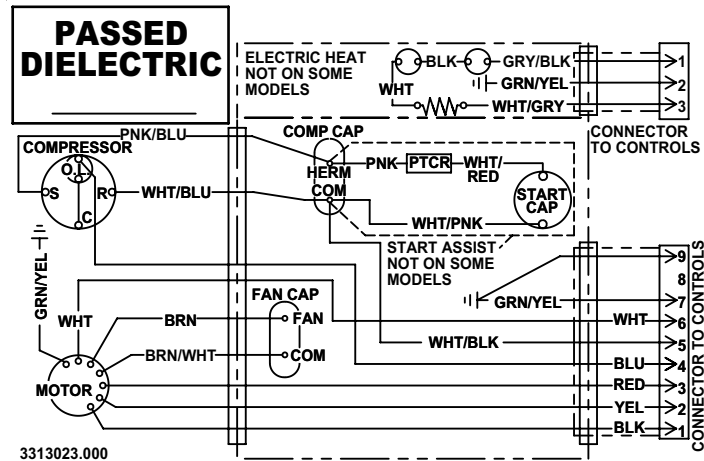
FIG. 20



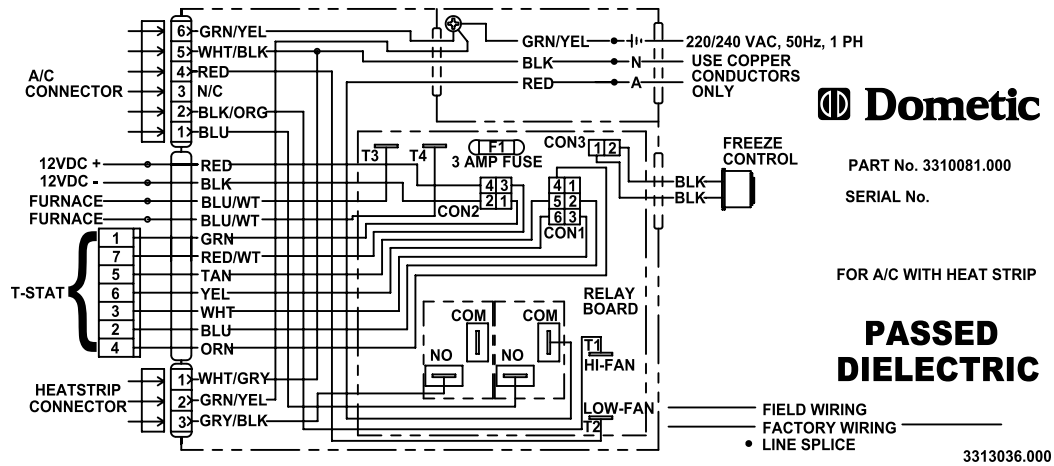
6. This completes the unit installation. We recommend that the power be supplied to the unit and check for proper operation. Refer to the Analog Thermostat Operating Manual or User's Guide for a description of the unit operation.

WIRING DIAGRAMS

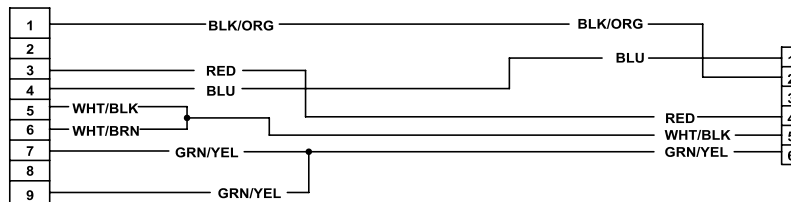
3241 Wiring Diagram



Analog Control Kit, Cool-Furnace-Heat Strip

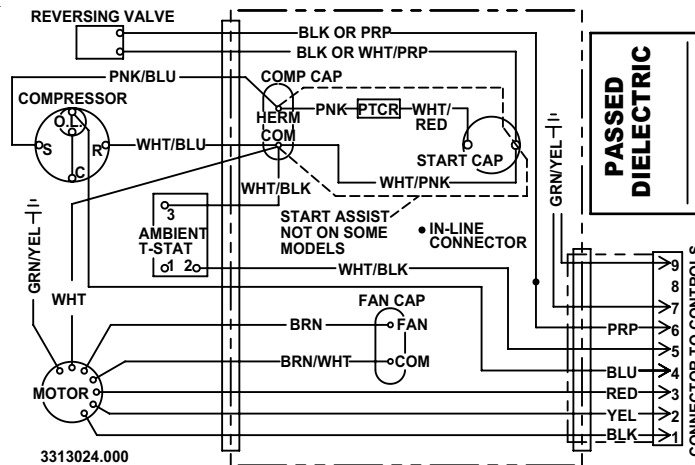


Air Conditioner 6 To 9 Pin Adapter Cable 3312234.010

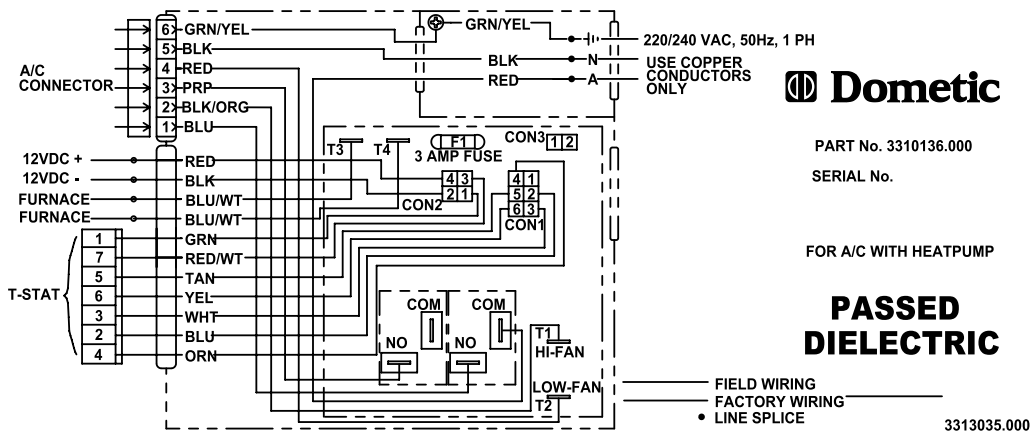


WIRING DIAGRAMS

3242 Wiring Diagram



Analog Control Kit Cool-Furnace-Heat Pump



Heat Pump 6 To 9 Pin Adapter Cable 3108179.023

