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Model Number _____
Serial Number _____
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SERVICE OFFICE
Dometic, LLC
2320 Industrial Parkway
Elkhart, IN 46516
574-294-2511

CANADA
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Brantford, Ontario
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For Service Center
Assistance Call:
800-544-4881



Roof Top Unit			
Description	Model	Use With Air Distribution Box Model 3107210.XXX	SZLCD Control
			Air Conditioner
Air Conditioner	459530	3313189.000 Cool/Furn White 3313189.015 Cool/Furn Black	
Heat Pump	459156	3313189.023 Cool/Furn/HP White 3313189.031 Cool/Furn/HP Black	
Heat Pump	459196	3313189.064 Cool/Furn/HP White 3313189.072 Cool/Furn/HP Black	

This unit is designed for OEM installation.

⚠ 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 ce produit doit être effectuée par un réparateur qualifié. Toute modification de ce produit peut être extrêmement dangereuse et entraîner des blessures ou dommages matériels.

MODELS

457915.30X 459516.30X
457915.70X 459516.70X
459156.70X 459530.70X
459196.70X

INSTALLATION INSTRUCTIONS

REVISION
Form No. 3313433.025 4/11
(Replaces 3313433.017)
(French 3313434.023)
©2011 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. It is used to alert you to personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

UNDERSTAND SIGNAL WORDS

A signal word, when used with the safety alert symbol, will identify a safety hazard and its level of risk for personal injury. A signal word, without the safety alert symbol, will be used for property damage messages only.

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

⚠ CAUTION CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE NOTICE is used to address practices not related to personal injury.

⚠ WARNING
Read and follow all safety information and instructions to avoid personal injury.

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 inch and maximum of 4 inches distance between roof to ceiling of recreational vehicle.

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 temperature.

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 a high heat gain, accessories like Dometic outdoor patio and window awnings will reduce heat gain by removing the direct exposure to the 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-410A (Oz.)	Minimum Wire Size* 12 AWG Copper Up to 24'	AC Circuit Protection ***Installer Supplied	Minimum Generator Size** 1 Unit / 2 Units
457915.30X	13,500		12.4	61.0	2.5	5.8	20.0		20 Amp	3.5 KW / 5.0 KW
457915.70X	13,500		12.4	63.0	2.5	5.8	18.0		20 Amp	3.5 KW / 5.0 KW
459156.70X	15,000		13.3	66.0	2.0	5.6	29.0		20 Amp	3.5 KW / 5.0 KW
459196.70X	15,000		13.3	66.0	2.0	5.6	29.0		20 Amp	3.5 KW / 5.0 KW
459516.30X	15,000		13.4	64.0	2.0	5.6	27.5		20 Amp	3.5 KW / 5.0 KW
459516.70X	15,000		13.3	66.0	2.0	5.6	27.5		20 Amp	3.5 KW / 5.0 KW
459530.70X	N/A		8.6	50.0	2.5	5.8	20.0		15 AMP	2.5 KW / 4.0 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 Circuit Breaker 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.

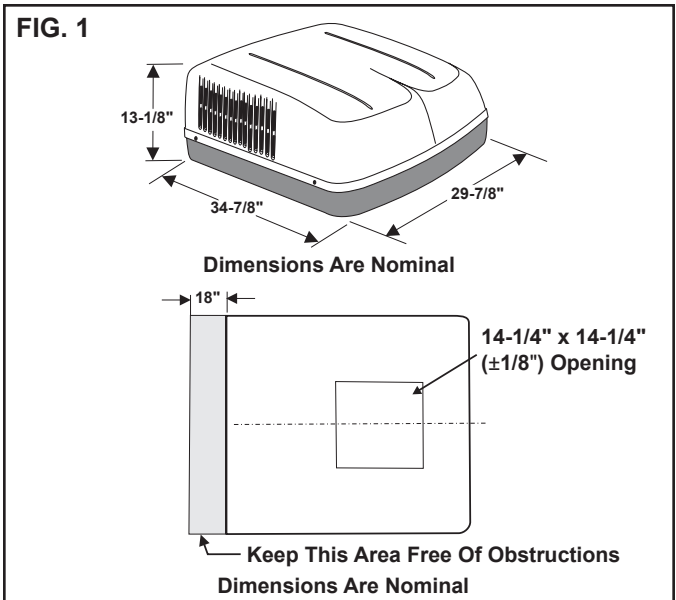
B. Choosing Proper Location For The Unit

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, but up to a 15° tilt is acceptable.

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

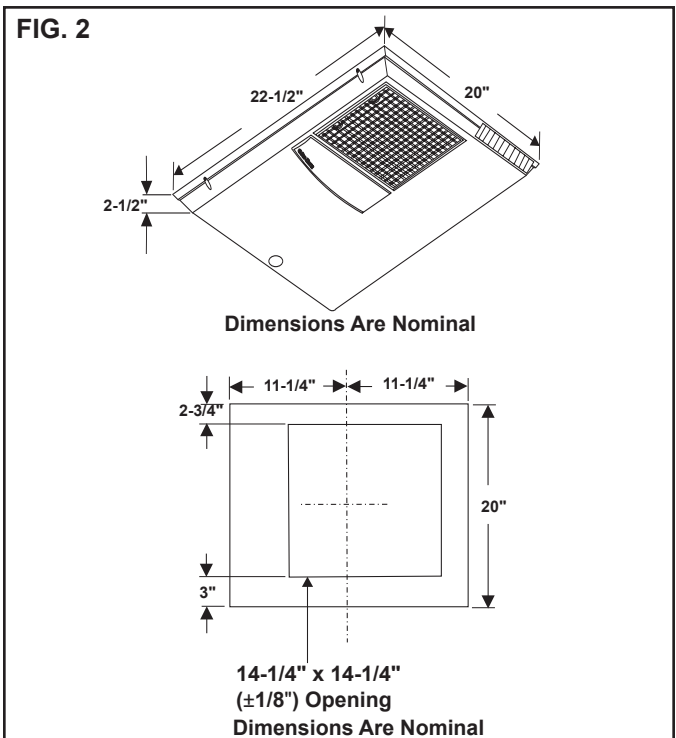


- b. The roof must be designed to support 130 pounds when the RV is in motion. Normally a 200 lb. static load design will meet this requirement.

NOTICE

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.



C. Roof Preparation

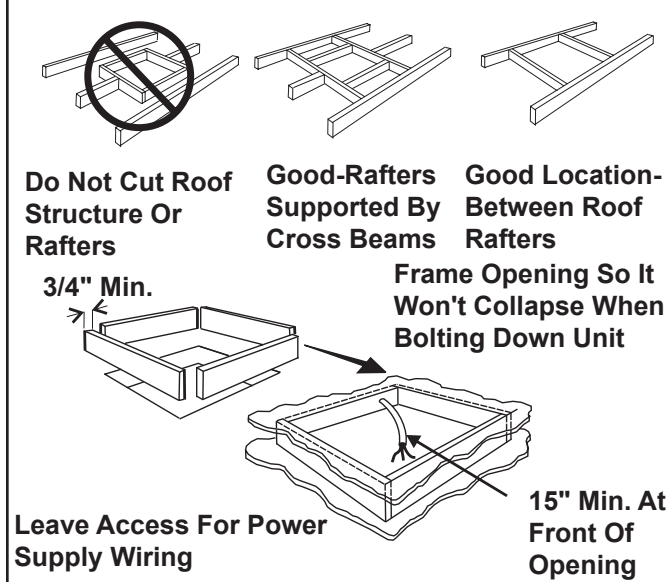
1. Opening Requirements - Before preparing the ceiling opening, the type of system options must be decided upon. Read all of the following instructions before beginning the installation.

⚠ 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 obey 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 ANSI A119.2.
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. Framing stock 3/4" or more in thickness must be used. Remember to provide an entrance hole for power supplies, 3 conductor cable, and furnace wiring (if applicable).

FIG. 3



NOTICE

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 copper, with ground, 120 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 14-1/4" x 14-1/4" ($\pm 1/8$ ") 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 that at least 15" of supply wire extends into the roof opening. This insures an easy connection at the junction box.
 - d. Wiring 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.
 - e. Protect the wire where it passes into the opening with approved method. See paragraph "d" above.
2. Route a dedicated 12 VDC supply wire (18-22 AWG) from the RV's converter (filtered side) or battery to the roof opening.
 - a. This supply wire 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 3 conductor cable, 18 to 22 AWG, from the Single Zone LCD (hereinafter referred to as SZLCD) 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 SZLCD thermostat. See Section E.
4. If system includes a gas furnace, route two 18 gauge thermostat wires from the furnace to the roof opening of the unit that will control it. If more than one furnace is to be used, route the second set of thermostat wires to the second unit. Make sure that 15" of wire extends into the opening.

E. Choosing Thermostat Location

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

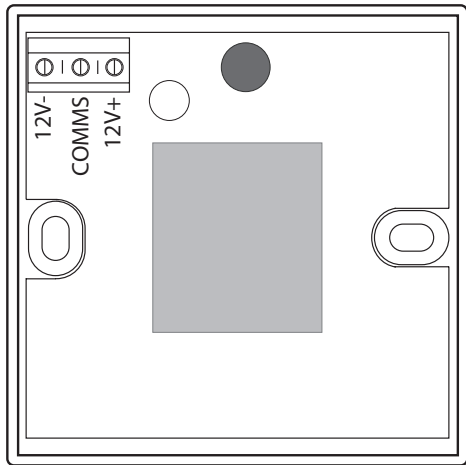
1. Locate the thermostat 54" above the floor.
2. Install the thermostat on a partition, not on an outside wall.
3. **NEVER** expose the thermostat to direct heat from lamps, sun or other heat producing items.
4. Avoid locations close to doors that lead outside, windows or adjoining outside walls.
5. Avoid locations close to supply registers and the air from them.

F. Thermostat and Thermostat Cable Installation

1. SZLCD Thermostat

Note: Wire colors listed for the three conductor cable match the wire colors in the harness at the SZLCD control box. Available wire colors may vary.

FIG. 4



- Remove the cover from the SZLCD thermostat. Depress tab on bottom of thermostat and separate it from the base.
- Insert the previously run three (3) conductor cable through the hole in the base assembly.
- Cut back the outer cable shield approximately 3 inches and strip 1/4" insulation from each wire.
- Mount the thermostat level on the wall using the screws provided.
- Make the following connections to the thermostat. See FIG 4.
 - Red/white wire to the 12V+ terminal
 - Black wire to the 12V- terminal
 - Orange wire to the "COMMS" terminal
- Inspect all connections to make sure they are tight and not touching any other terminals or wires.
- Push the wires back through the base into the wall. Place cover on the thermostat and push until an audible click is heard.

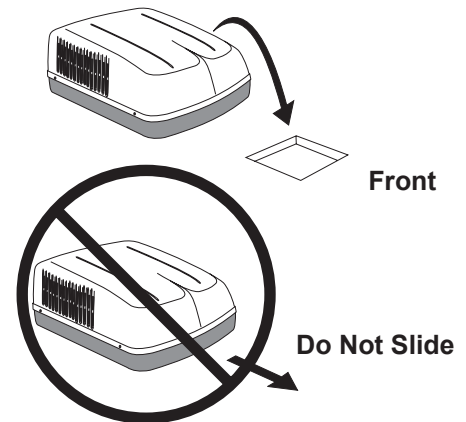
G. Placing The Unit On The Roof

⚠ WARNING

Personal injury hazard. This unit weighs approximately 100 pounds. To prevent back injury, use a mechanical hoist to place unit on roof. Failure to obey this warning could cause severe personal injury.

- Remove the unit from the carton and discard carton.
- Place the unit on the roof.
- Lift and place the unit over the prepared opening using the gasket on the unit as a guide. See FIG. 5.

FIG. 5



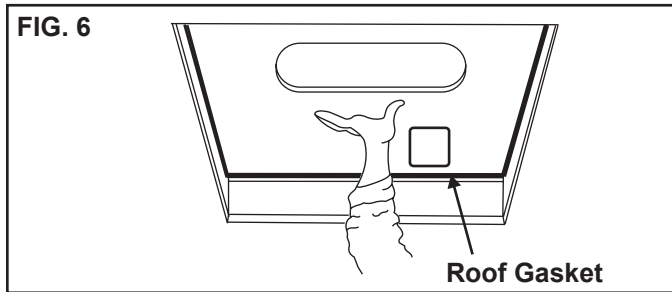
NOTICE

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

- Place the air distribution box kit inside the RV. This box contains mounting hardware for the unit and will be used inside the RV. This completes the outside work. Minor adjustments can be done from inside the RV if required.

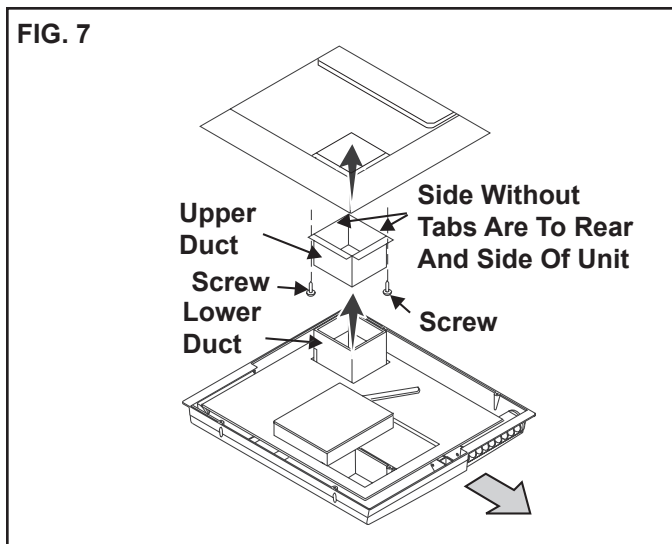
H. Installation Preparation

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. 6.

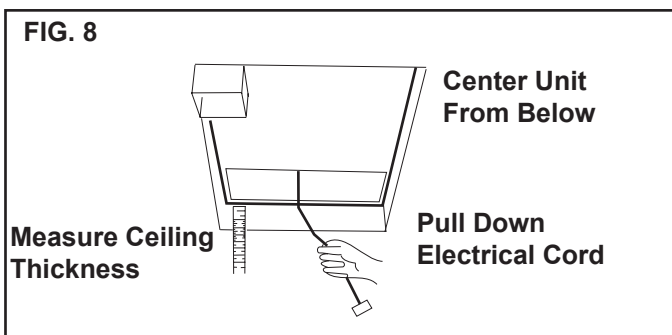


2. Remove air distribution box and mounting hardware from carton. The upper duct is shipped inside the lower duct which is part of the ceiling template.
3. All models listed in this manual will use a four (4) bolt pattern for installing the air distribution box kit. These bolts are furnished in the SZLCD control kit.
4. Remove upper duct from ceiling template and locate it over blower discharge. See FIG. 7.

Note: Edges without flanges install toward REAR and SIDE of opening.

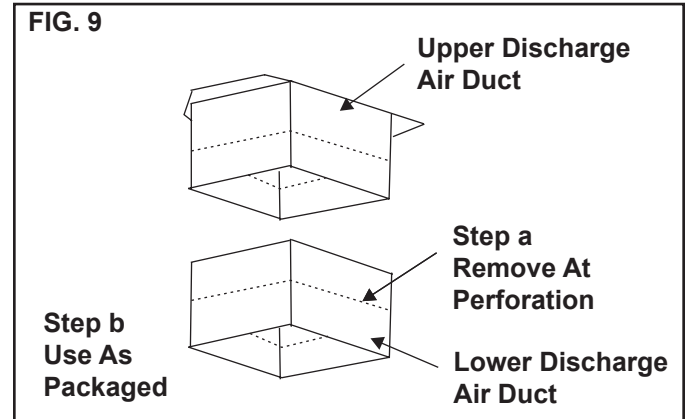


5. Use two (2) sharp pointed #10 sheet metal screws to hold duct to base pan. Screw holes are provided in bottom of base pan for these screws.
6. Reach up into the return air opening and pull the unit electrical cord down for later connection. See FIG. 8.



Note: In some applications it may be necessary to extend the 6 pin cable. Order cable number 3105584.001 if needed.

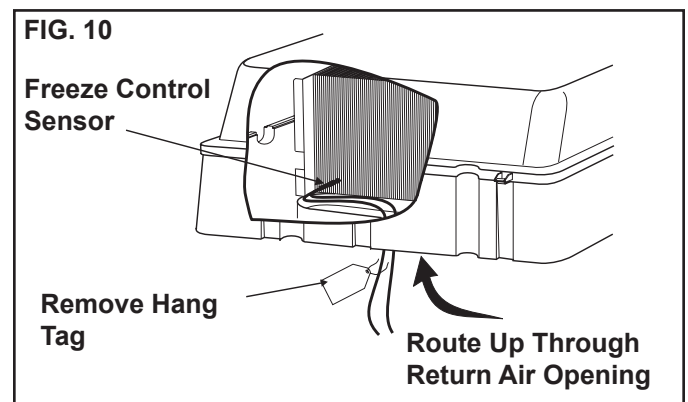
7. Measure the ceiling to roof thickness:
 - a. If distance is 2"-3", remove perforated tabs from lower duct. See FIG. 9.
 - b. If distance is 3"-4", install ducts as received. See FIG. 9.
 - c. If distance is 4"-6", use optional 3106775.004 Duct Adaptor and 3100895.006 Bolt Kit.



8. Remove the junction box cover from the SZLCD control box.
9. Plug the electrical cord (6 pin connector) from the upper unit into the mating connector in the SZLCD control box.

Note: Plastic SZLCD control boxes will need to have the supplied freeze control sensor plugged into the matching connector in the SZLCD control box.

10. Insert the freeze control sensor into the evaporator coil fins approximately 1" above the bottom of the coil fins and on the left side as shown in FIG. 10. Bend fins over sensor to secure in place.



I. Wiring The System

1. 120 VAC Power Supply Connection

⚠ WARNING

Disconnect 120 VAC. Failure to obey 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 and that you connect 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.

- Route the 120 VAC supply wire through the strain relief in the SZLCD control box. Tighten strain relief, making sure enough wire is inside SZLCD control box to connect with unit 120 VAC wires.
 - Connect the white to white; black to black; and green or bare copper wire using appropriate size wire connectors. See chart on page 3.
 - Push the wires into the SZLCD control box and install the cover with the four blunt point screws provided.
2. Low Voltage Wire Connections At The SZLCD Control Box.

NOTICE

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

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

Note: Plastic SZLCD control boxes only. Plug the supplied 4 wire harness and the supplied 2 blue wires into their matching connectors in the SZLCD control box.

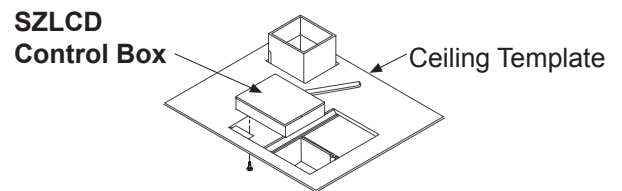
- Connect the previously run +12 VDC supply wire to the red wire from the SZLCD control box.
- Connect the previously run -12 VDC supply wire to both the black wire from the SZLCD control box and to wire of the three wire cable that goes to the thermostat 12V- terminal.
- Connect the previously run furnace thermostat wires (if applicable) to the blue wires coming from the SZLCD control box.

- Connect the red/white wire from the SZLCD control box to wire of the three wire cable that goes to thermostat 12V+ terminal.
- Connect the orange wire from the SZLCD control box to wire of the three wire cable that goes to thermostat COMMS terminal.

J. Installing The Unit

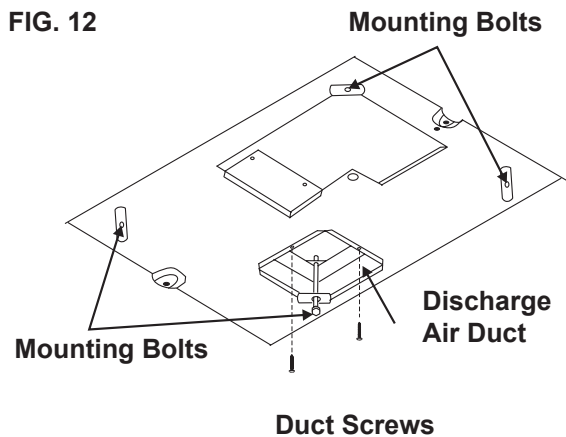
- Install the SZLCD control box on the ceiling template as shown in FIG. 11. Drive two (2) #6 x 3/8" (plastic control box) or #10 x 3/8" (metal control box) blunt point Phillips head screws (provided) through the ceiling template into holes in the SZLCD control box to hold into place.

FIG. 11

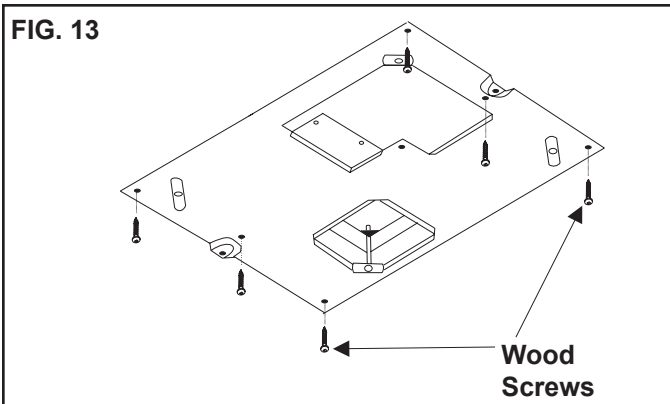


- If your installation includes the optional electric heat kit, (457915 & 459516 models only) install it at this time. Follow the instructions with the heat package for its installation procedure.
- Install ceiling template by sliding the lower duct over upper duct.
- Hold the ceiling template up to the 14-1/4" x 14-1/4" ($\pm 1/8$ ") opening with one hand and with the other, install the four (4) 1/4" mounting bolts through the template and into the unit base pan.
 - Tighten all four (4) mounting bolts until they touch the template but are not tight. Check alignment. There should be an equal opening on each side and the rear flange must be tight against the roof opening.

FIG. 12



- With the ceiling template flat against the ceiling install six (6) wood screws (installer supplied) at an angle, so as to stretch and flatten the template. Three across the front and three across the back of the template. See FIG. 13.



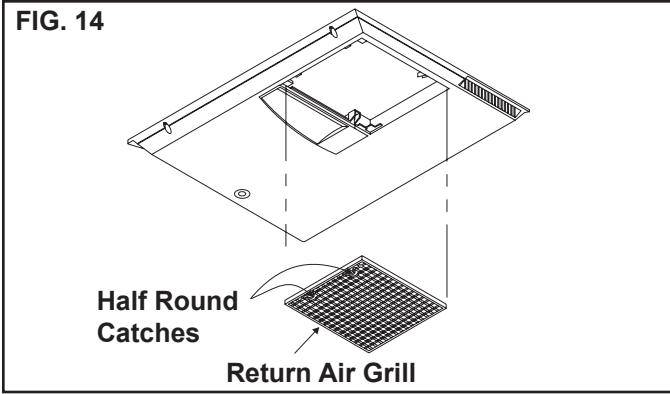
- c. **EVENLY** tighten the bolts to a torque of 40 to 50 inch pounds. This will compress the roof gasket to approximately 1/2". The bolts are self locking so further tightening is not necessary. See FIG. 13.

NOTICE

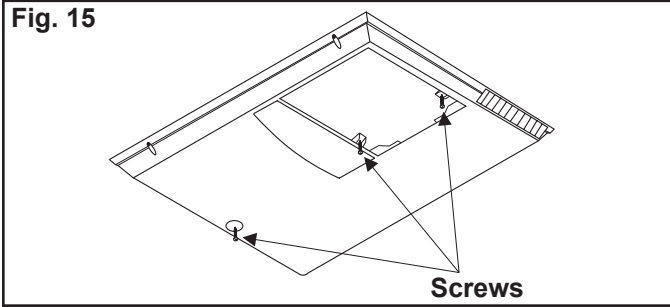
If bolts are left loose there may not be an adequate roof seal or if over tightened, damage may occur to the unit base or ceiling template. Tighten to torque specifications listed in this manual.

K. Air Distribution Box Installation

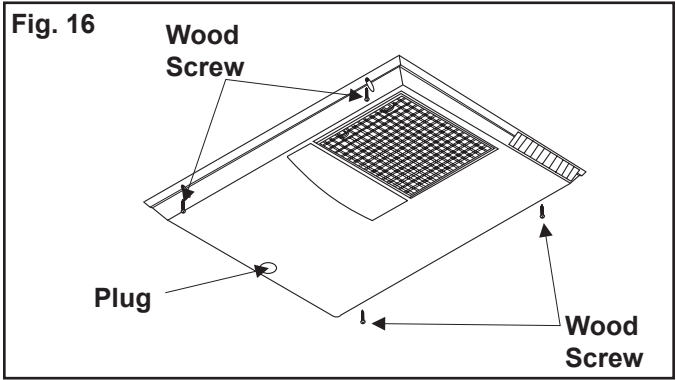
1. Remove return air grill from air distribution box by pulling in on half round finger catches. See FIG. 14.



2. Hold air distribution box up to ceiling template and install three (3) #10 x 3/8" screws at air distribution box mounting point. See FIG. 15.



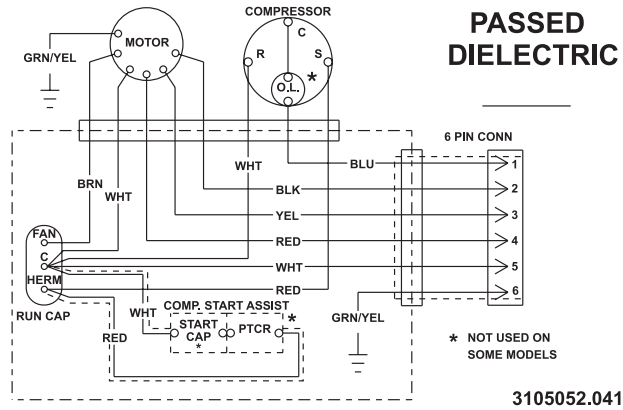
3. Snap hole plug into place at rear of air distribution box. See FIG. 16
4. There are four optional mounting holes on the outer edge of the return air opening for which screws are not provided. These are only required where an uneven ceiling does not allow proper fitting of the air distribution box. See FIG. 16.



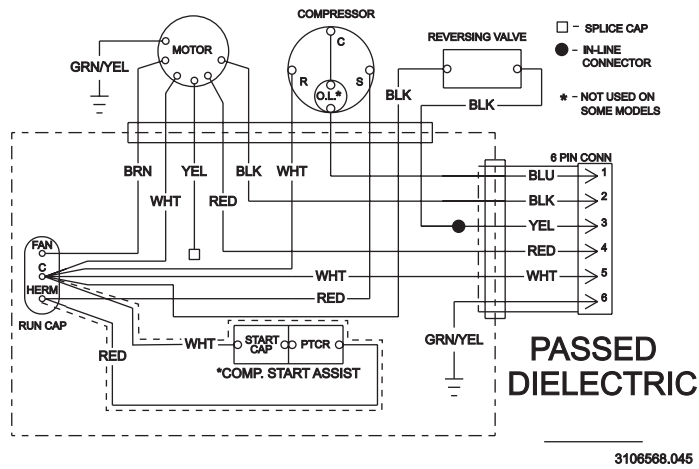
5. Reinstall return air grill and filter into air distribution box.
6. Verify that all features of the installed system work. Please read Unit User's Guide or Operating Instructions before proceeding. Check fan speed, heat strip (if applicable), furnace operation (if applicable) and cooling operation. If the features do not work disconnect the 12 VDC and 120 VAC power supplies and verify that all wiring is correct.

WIRING DIAGRAM

457915, 459516 & 459530 Unit Wiring Diagram

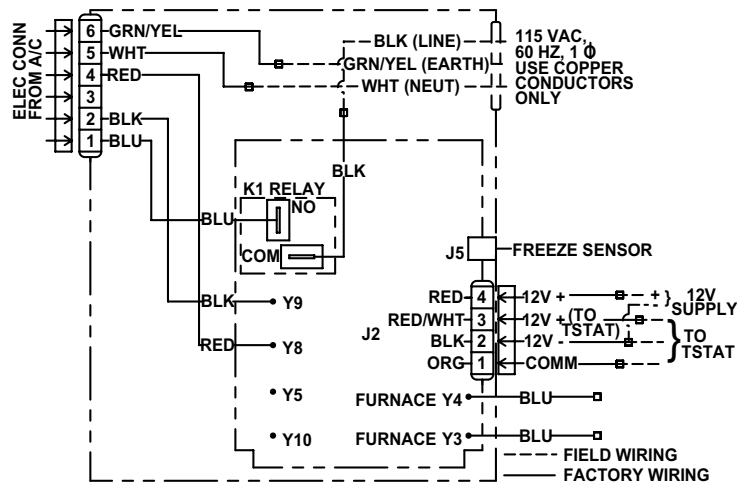


459156 & 459196 Unit Wiring Diagram



3313189.000 & 3313189.015 Single Zone LCD Control Kit Wiring Diagram Cool/Furnace

IF THIS PRODUCT IS SUPPLIED BY A WIRING SYSTEM THAT, IN ACCORDANCE WITH CANADIAN ELECTRIC CODE PART 1 C22.1-2009 AND THE NATIONAL ELECTRIC CODE, ANSI/NFPA NO. 70-2008, REQUIRES THE INSTALLATION OF AN EQUIPMENT GROUNDING CONDUCTOR OR CONDUCTORS, TERMINAL(S) OR GROUND SCREW(S) FOR THIS PURPOSE MUST BE INSTALLED.

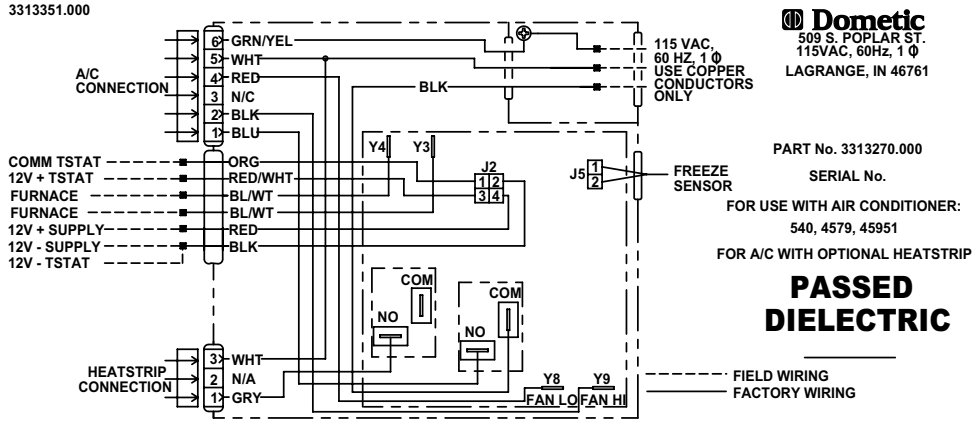


3313379.000



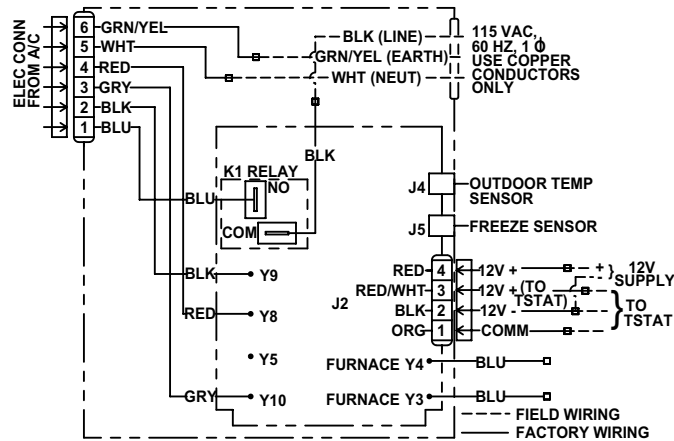
WIRING DIAGRAM

3313189.049 & 3313189.056 Single Zone LCD Control Kit Wiring Diagram Cool/Furnace/Heat Strip



3313189.023 & 3313189.031 Single Zone LCD Control Kit Wiring Diagram Cool/Furnace/HP

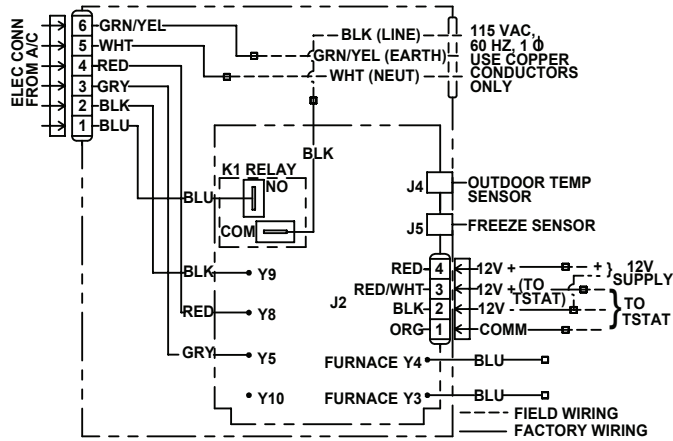
IF THIS PRODUCT IS SUPPLIED BY A WIRING SYSTEM THAT, IN ACCORDANCE WITH CANADIAN ELECTRIC CODE PART 1 C22.1-2009 AND THE NATIONAL ELECTRIC CODE, ANSI/NFPA NO. 70-2008, REQUIRES THE INSTALLATION OF AN EQUIPMENT GROUNDING CONDUCTOR OR CONDUCTORS, TERMINAL(S) OR GROUND SCREW(S) FOR THIS PURPOSE MUST BE INSTALLED.



3313378.000

3313189.064 & 3313189.072 Single Zone LCD Control Kit Wiring Diagram Cool/Furnace/HP

IF THIS PRODUCT IS SUPPLIED BY A WIRING SYSTEM THAT, IN ACCORDANCE WITH CANADIAN ELECTRIC CODE PART 1 C22.1-2009 AND THE NATIONAL ELECTRIC CODE, ANSI/NFPA NO. 70-2008, REQUIRES THE INSTALLATION OF AN EQUIPMENT GROUNDING CONDUCTOR OR CONDUCTORS, TERMINAL(S) OR GROUND SCREW(S) FOR THIS PURPOSE MUST BE INSTALLED.



3313453.000