ADVENT AIR

Roof Top Air Conditioner

Non Ducted System
INSTALLATION AND OPERATING INSTRUCTIONS

USED WITH
Air Distribution Box Kit
Mechanical Type

RECORD THIS UNIT INFORMATION FOR FUTURE REFERENCE:
Model Number:
Serial Number:
Date Purchased:

PRE-WIRED FOR OPTIONAL HEAT PACKAGE

⚠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.

c UL US LISTED
ROOM AIR CONDITIONER
3TY1

asa ELECTRONICS®
2602 Marina Drive • Elkhart, IN 46514
www.asaelectronics.com

SAFETY PRECAUTIONS FOR R32 REFRIGERANT

1. Overview

1.1. Safety Instructions

This manual, provided by the manufacturer, is part of the air conditioner, and users must read it carefully before use. The information provided in the instructions; if correctly observed, can ensure the correct use of the machine and help users eliminate or reduce the risk of accidents and injuries.

Safety Symbol

This is a safety warning sign. When you see this sign in this manual, the corresponding contents may cause personal injury, so you must follow the recommended preventive measures and safe operation instructions.

Sign: Warning or caution signs are used simultaneously, which indicate the potential risk level.

Warning indicate a potentially dangerous situation that may lead to death or serious injury.

Note indicate a potentially dangerous situation, which may lead to minor or moderate injury.

Caution indicate a potentially dangerous situation, which may cause property damage.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children should be supervised to ensure that they do not play with the appliance.

ADVENT®
24 MONTH LIMITED WARRANTY

ASA Electronics (ASA) warrants to the original retail purchaser of this Advent product that should this product or any part thereof, under normal use and conditions, be proven defective in material or workmanship within 24 months from the date of original purchase, such defect(s) will be repaired or replaced (at ASA'S option) without charge for parts and repair labor.

The intended use of this Advent product is on recreational vehicles, also known as motorhomes and travel trailers. Any installation outside of this intended use is not to be considered normal use and warranty coverage will not be extended under the expressed warranty condition of improper installation.

To obtain repair or replacement within the terms of this warranty, contact ASA at (888) 283-7374. The product is to be delivered with proof of warranty coverage (dated bill of sale), specification of defect(s) with purchaser's name and return address, transportation prepaid to ASA at the address shown provided at the time of return authorization.

This warranty does not extend to the effects of this device on other devices, to costs incurred for removal or reinstallation of the product, or to damage of any product, accessories, or electrical system(s). This warranty does not apply to any product or part thereof which, in the opinion of the company, has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

THE EXTENT OF ASAS LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE, AND, IN NO EVENT, SHALL ASA'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER FOR THE PRODUCT.

This warranty is in lieu of all other express warranties or liabilities. ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, SHALL BE LIMITED TO THE DURATION OF THIS WARRANTY. ANY ACTION FOR BREECH OF ANY WARRANTY HEREUNDER INCLUDING WARRANTY OF MERCHANTABILITY MUST BE BROUGHT WITHIN A PERIOD OF 30 DAYS FROM THE DATE OF ORIGINAL PURCHASE. IN NO CASE SHALL ASA BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREECH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WHATSOEVER. No person or representative is authorized to assume for the company any liability other than expressed herein in connection with the sale of this product.

ASA Electronics
(888) 283-7374

37000008
Rev B

IMPORTANT WARRANTY INFORMATION

DO NOT RETURN DEFECTIVE PRODUCT TO YOUR PLACE OF PURCHASE

CONTACT ADVENT® @ 1-888-283-7374

Please place this Warranty Agreement and a copy of your sales receipt in a safe and secure location, along with your other valuable documents.

MOUNTING PARTS

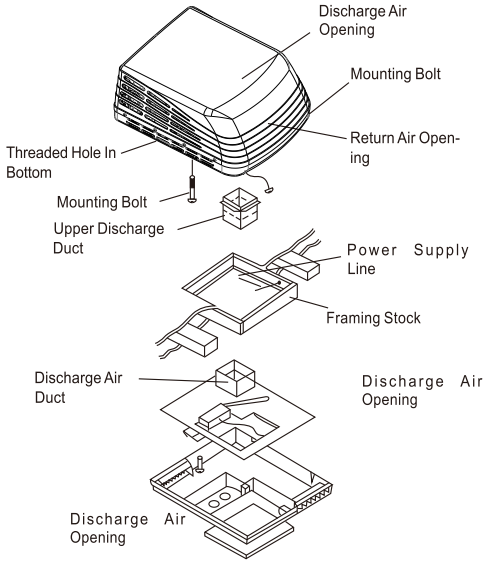
A. (4) 1/4" — #20 x 7" bolts

B. (4) #8 x 5/8" long sharp point wood screws

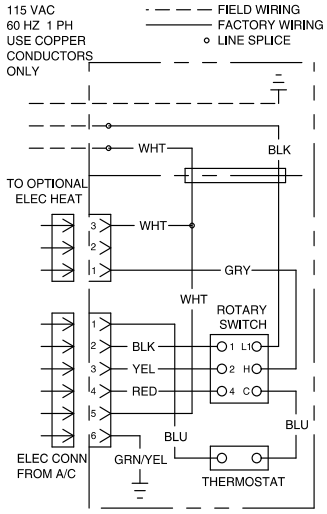
C. (7) #10 x 3/8" blunt point tapping screws

D. (1) Hole Plug

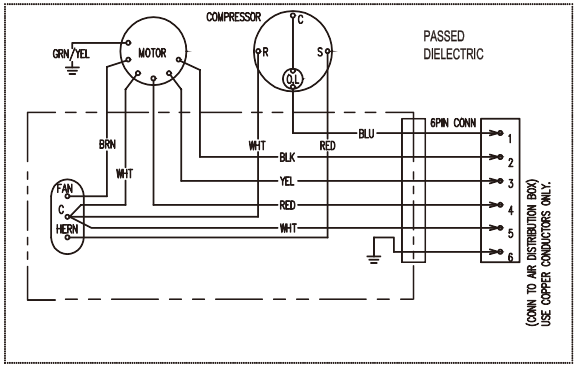
AIR CONDITIONING UNT



AIR BOX - CONTROLS WIRING DIAGRAM



AIR CONDITIONER-WIRING DIAGRAM



WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)

Do not pierce or burn.

Be aware that refrigerants may not contain an odour.

The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation;

- a warning that the appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).

The appliance shall be stored so as to prevent mechanical damage from occurring.

The compliance with national gas regulations shall be observed; Min applicable area of this machine is 15m .Please ensure that there are no obstacles in front of the machine; keep ventilation openings clear of obstruction. Servicing shall be performed only as recommended by the manufacturer.

Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.

Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

Before servicing the appliance

Checks to the area:

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is linimized. For repair to the refrigerating system, the following precautions shall be complied prior to conducting work on the system.

Work procedure:

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

General work area:
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

Checking for presence of refrigerant:
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

Presence of fire extinguisher:
If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.
Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No ignition sources:
No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Checks to the refrigeration equipment:
Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance. The following checks shall be applied to installations using flammable refrigerants:

-- the charge size is in accordance with the room size within which the refrigerant containing parts are installed;

-- the ventilation machinery and outlets are operating adequately and are not obstructed;

3. FAN MOTOR:
Factory lubricated and requires no service.

4. 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 control knob to a warmer setting (counter clockwise). Should frosting continue, operate on LOW, MED. or HIGH FAN setting until the cooling coil is free of frost.
If your unit fails to operate or operated improperly, check the following before calling your service center.

SERVICE

If the unit does not operate

1. If RV is connected to a generator, check to be sure the generator is running and producing the proper voltage.
2. 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.
3. Check your circuit breaker to see if it is open.
4. After the above checks, call your local service center for further help. This unit must serviced by qualified service personnel only.

3. HEATING OPERATION:

(With Optional Heat Kit Installed)

Note: This electric heater will not replace a furnace for heating your RV in cold weather. The intent is to remove the chill on cool days or mornings. (without heater kit installed, the heating selection will be fan only)

A. Turn the selector switch to OPT. HEAT for heating operation.

B. The Heater will come on and begin heating.

C. When desired temperature level in RV is reached, move the selector switch to off position or fan position.

Note: Thermostat does not control heater ON/OFF cycle.

4. FAN OPERATION:

This will circulate the air in your RV without cooling or heating. There are three positions: HIGH FAN, MED. FAN or LOW FAN to select from, depending upon personal choice.

5. "OFF" POSITION:

This is to turn Unit off.

MAINTENANCE

1. AIR FILTER:

Every 30 days remove the return air filter located above the removable panel in the air box. Wash the filter with soap and warm water, let dry and then reinstall.

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

2. AIR BOX HOUSING:

Clean air box housing and control panel with a soft cloth dampened with a mild detergent. Never use furniture polish or scouring powders.

-- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

-- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

-- refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Checks to electrical devices:

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.

This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking; that no live electrical components and wiring are exposed while charging, recovering or purging the system;

that there is continuity of earth bonding.

Sealed electrical components shall be replaced.

Intrinsically safe components must be replaced.

Cabling:

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of flammable refrigerants:

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Leak detection methods:
The following leak detection methods are deemed acceptable for systems containing flammable refrigerants. Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. **NOTE Examples of leak detection fluids are**

- bubble method,
- fluorescent method agents.

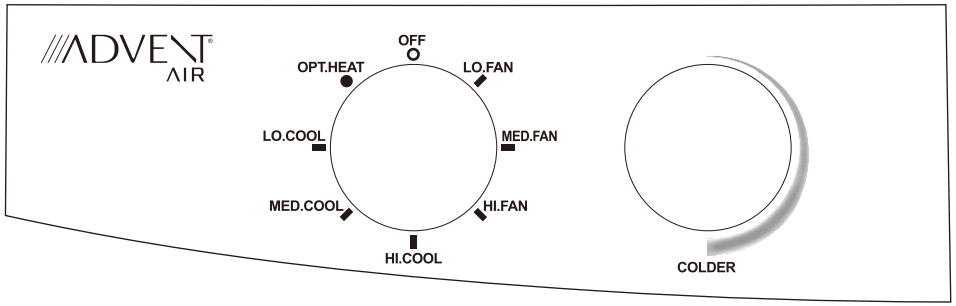
If a leak is suspected, all naked flames shall be removed/extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

Removal and evacuation:
When breaking into the refrigerant circuit to make repairs - or for any other purpose - conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.
The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using flame to open circuit;
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.
Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

OPERATING INSTRUCTIONS



1. CONTROLS:

A. The Selector Switch has eight positions including “OFF”. This controls fan speeds, heating mode, and cooling modes.

B. The Thermostat controls the temperature range from 65°F(16°C) on the coldest side to 90°F(30°C) on the warmest side. In the cooling mode, the compressor ON/OFF is controlled by the thermostat setting.

2. COOLING OPERATION:

A. Set the thermostat at the desired temperature level.

B. Set the fan speed that best satisfies your needs:

a. **HIGH COOL**: Selected when maximum cooling and dehumidification is required.

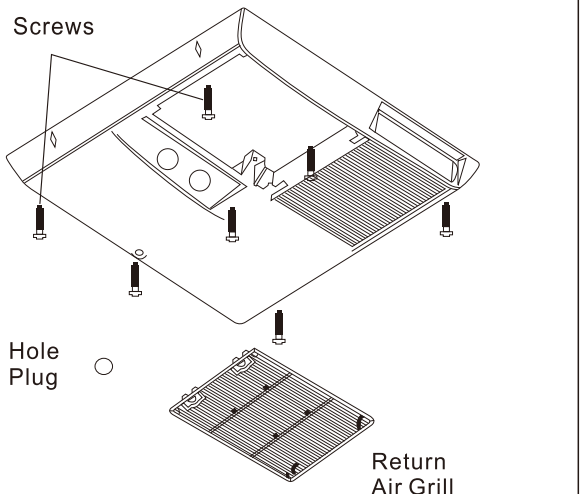
b. **MED. COOL**: Selected when normal or average cooling is required.

c. **LOW COOL**: Selected when room is at desired comfort level and needs to be maintained. Normally this speed is used for night time operation.

Note: The blower runs continuously to circulate air and maintain an even temperature. The compressor will come on as cooling is required to maintain the selected temperature level.

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

FIG. 10



C. Snap hole plug (D) into place at rear of air box.

D. Install four (4) wood screws (B) that hold air box tight to ceiling if so desired.

E. Reinstall return air grille and filter into air box.

F. The air conditioner installation is now complete. Turn on power to the unit for operational check. Please read Unit Operating Instructions before proceeding.

G. The ceiling unit ACRND25 used with Roof top unit : ACR135(B)、ACR150(B)、ACR135LP(B)、ACR150LP(B).

Charging procedures:

In addition to conventional charging procedures, the following requirements shall be followed.

-- Ensure that contamination of different refrigerants does not occur when using charging equipment.
Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.

-- Cylinders shall be kept upright.

-- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.

-- Label the system when charging is complete (if not already).

-- Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning:

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in with manufacturer's instructions.

h) Do not overfill cylinders. (No more than 80 % volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Labelling:
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

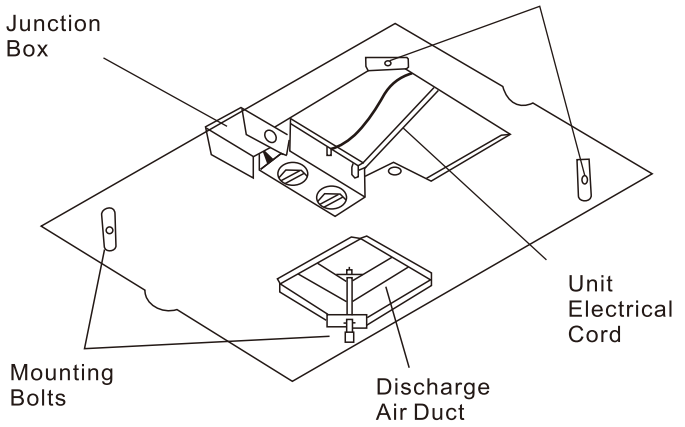
Recovery:
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Qualification of workers:
Qualification of the working personnel for maintenance, service and repair operations should according to UL 60335-2-40, CAN/CSA-C22.2 NO. 60335-2-40: 22 Annex HH..
Every working procedure that affects safety means shall only be carried out by competent persons according to Annex HH. Special training additional to usual refrigerating equipment repair procedures is required when equipment with FLAMMABLE REFRIGERANTS is affected.

Dispose of air conditioner in accordance with Federal and Local Regulations. Flammable refrigerants require special disposal procedures. Contact your local authorities for the environmentally safe disposal of your air conditioner.

Add on/off switch between branch circuit and product or other means in accordance with the wiring rules for disconnection.

FIG. 9



⚠ WARNING

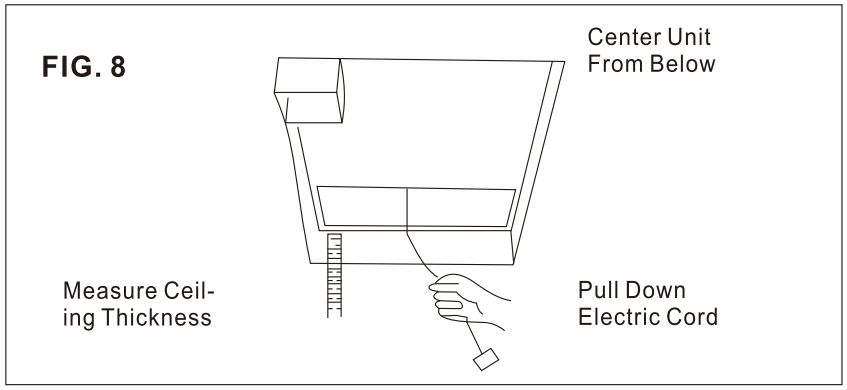
1. Disconnect 120volt AC. Failure to follow these instructions could create a shock hazard causing death or severe personal injury!

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

A. Route supply line into junction box through provided Connector. Six(6) inch leads are sufficient for connection to unit wires and ground screws.
B. Connect white wire in junction box to white or neutral wire from supply line.
C. Connect black wire in junction box to black or hot wire from supply line.
D. Connect supply ground wire to identified ground screw in junction box.
E. Install junction box cover with two (2) blunt point screws (C).
F. Plug unit electrical cord into the mating connector on control box.
G. Plug in optional heat package(if used) on control box.

7. INSTALL AIR BOX

A. Remove return air grille from air box by pulling in on half-round finger catches.



D. Measure (See FIG.8) the ceiling to roof thickness:

1. If distance is 1"-2",remove perforated tabs from both upper and lower ducts.
2. If distance is 2"-3" , remove perforated tabs from bottom duct only.
3. If distance is 3"-5" , install ducts as received.
4. If distance is greater than 5", close gap with foil tape or insulation.

E. Install ceiling template by sliding lower duct over upper duct.

F. Start each mounting bolt by hand before tightening any of them. The four(4) threaded inserts in the base pan can be seen to aid in starting the bolts.

EVENLY TIGHTEN MOUNTING 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.

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.

6. WIRING OF SYSTEM

Note: All wiring must comply with the National Electrical Code and State or Local Codes or regulations.(Steps A.-G refer to FIG.9.)

INSTALLATION & OPERATING INSTRUCTIONS

<u>These instructions must stay with the unit</u>

Safety Instructions
This manual has safety information and instructions to help users eliminate or reduce the risk of accidents and injuries.

Read and follow all safety information, installation guides, recommended precautions, and safe operating instructions.

GENERAL INFORMATION

A. This air conditioner / heat pump is designed for:

1. Installation on a recreational vehicle.
2. Mounting on the roof of a recreational vehicle.
3. Roof construction with rafters/joists on 16 inch centers.
4. 2.5" to 5.5" thick roofs.

B. The efficiency of the air conditioner / heat pump will be affected by the conditions inside and outside of the RV. Reducing the heat gain of the RV will allow the air conditioner / heat pump to function with greater efficiency. Here are some suggestions to reduce heat gain in your RV.

1. Select a shaded area to park your RV
2. Close windows and utilize the blinds and / or curtains.
3. Keep doors shut.
4. Avoid using appliances that produce heat.

Beginning the cooling / heating process early in the day will greatly improve the heat pump's ability to maintain the desired temperature.

In high temperature and high humidity environments, the air conditioner / heat pump should be set in Cool mode with the Fan Speed in the high position, This will allow for optimal cooling efficiency.

C. Condensation

The manufacturer of this air conditioner / heat pump 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 / heat pump removes this moisture from the air during cooling operation; keeping doors and windows closed when this air conditioner /heat pump is operating will minimize condensation.

Model	Rated BTU Output	Power supply	Compressor Rated Amperage	Locked Rotor Amperage	Fan Amperage	Locked Fan Rotor Amperage	Air Flow (High Speed) (cfm)	Refrigerant (R32) (oz)	Min. wire size	AC circuit protection (User supplied)	Unit dimensions (in)	Weight (lbs)
ACR135	13500	115VAC 60Hz 1PH	8.0	59.1	2.6	5.8	450	13.05	12AWG copper up to 24'	20 Amp	31x24.9x12.9	68
ACR150	15000		10.3	73.5	2.6	5.8	435	12		20 Amp	31x24.9x12.9	68
ACR135LP	13500		10.2	44.9	2.6	5.8	345	11.3		20 Amp	31x24.9x10.1	66
ACR150LP	15000		10.2	44.9	2.6	5.8	370	13.76		20 Amp	31x24.9x10.1	68

The instruction shall state the intended Operation environment as below:

Operating Temperature Range		
	Indoor side DB/WB (°F)	Outdoor side DB/WB (°F)
Maximum cooling	89.96/73.4	109.4/78.8
Maximum Electric Heating	80.06	80.06

Notes:

1. Consult the National Electric Code for proper sizing for wire lengths over 24 ft.
2. 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.
3. CIRCUIT PROTECTION: Time Delay Fuse or HACR Circuit Breakers Required.

INSTALLATION INSTRUCTIONS

1. PRECAUTIONS

A. Read installation and operating instructions carefully before attempting to start your air conditioner / heat pump installation.

B. The manufacturer will not be liable for any damages or injury incurred due to failure to follow these instructions.

C. Installation **must** comply with the National Electrical Code and any State or Local Codes or regulations.

D. **DO NOT** add any devices or accessories to this air conditioner / heat pump except those specifically authorized by manufacturer.

E. This equipment must be serviced by qualified personnel and some states require licensed personnel.

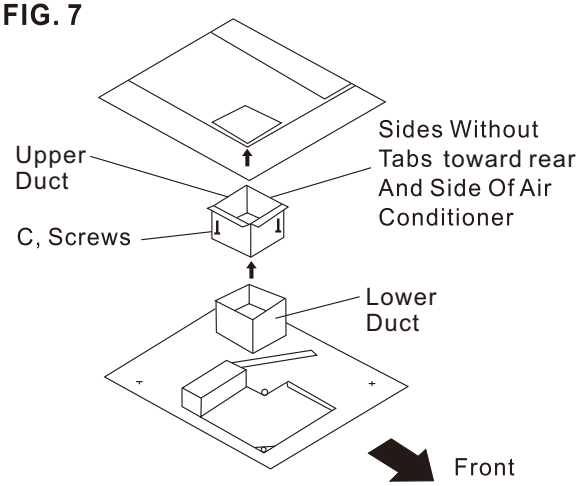
5. DISCHARGE DUCT AND CEILING TEMPLATE INSTALLATION

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

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

Note: Edges without flanges install toward REAR and SIDE of opening. See FIG.7.

FIG. 7



2. Use two (2) #10x3/8" screws (C) to hold duct to base pan. Holes provided in bottom of base pan for these screws to go into.

B. Check for correct alignment and adjust the unit as necessary (Roof Gasket centers over 14-1/4"±1/8" opening).

C. Reach up into return air opening of the air conditioner and pull the unit electrical cord down for later connection. See FIG.8.

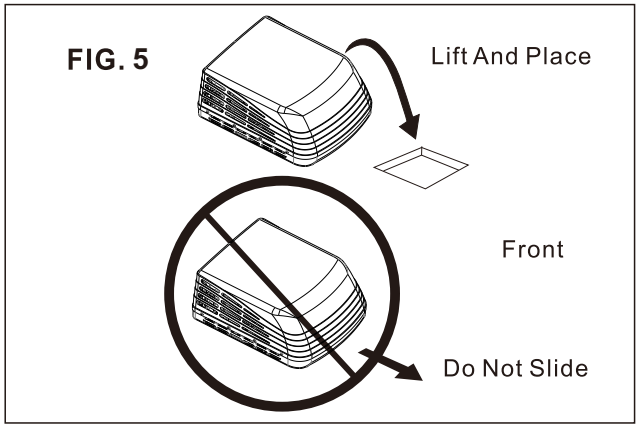
4.PLACING THE AIR CONDITIONER ON THE ROOF

A. Remove the Air Conditioner from the carton and discard the carton.

Note: If optional heat package is to be installed, do so at this time, before the air box is installed. Follow instructions with heat package for its installation procedure.

B. Place the air conditioner on the roof.

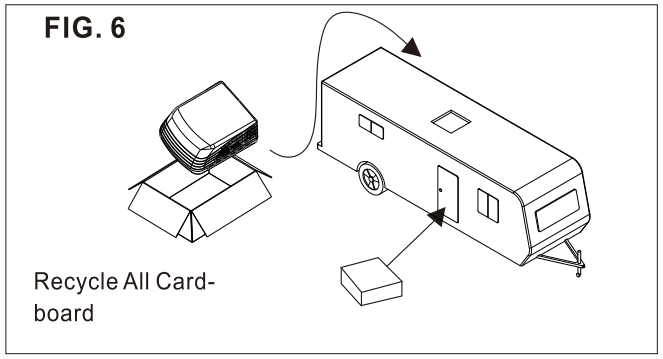
C. Lift and place the unit over the prepared opening using the gasket as a guide. The condenser coil goes toward the rear of the RV. See FIG.5.



CAUTION

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

D. Place the Air Box Kit inside the RV. This box contains mounting hardware for the air conditioner and will be used inside the RV. See FIG.6.



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

2. CHOOSING A LOCATION FOR THE AIR CONDITIONER

This product is designed for use as a RV roof top air conditioner . The use of this product in other applications will void the manufactures warranty.

A. NORMAL LOCATIONS:

The unit is designed to fit over an existing roof vent opening. When the vent is removed, it normally creates a 14-1/4" x14-1/4"±1/8" opening.

B. OTHER LOCATIONS:

When a roof vent is not available or another location is desired, the following is recommended:

1. For one unit installation: The air conditioner should be mounted slightly forward of center (front to back) and centered from side to side. See FIG.1.

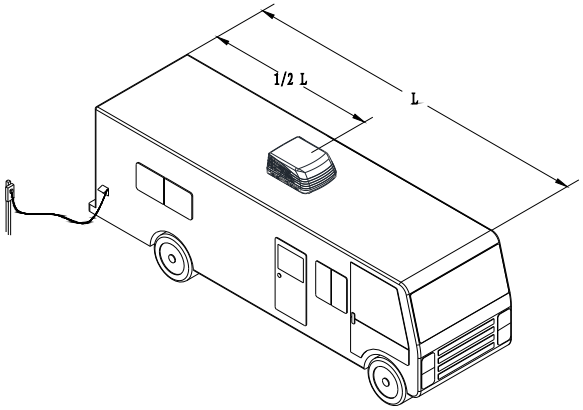


FIGURE 1

2. For two unit installation: Install one air conditioner 1/3 distance and the other air conditioner 2/3's from front of RV and centered from side to side. See FIG.2.

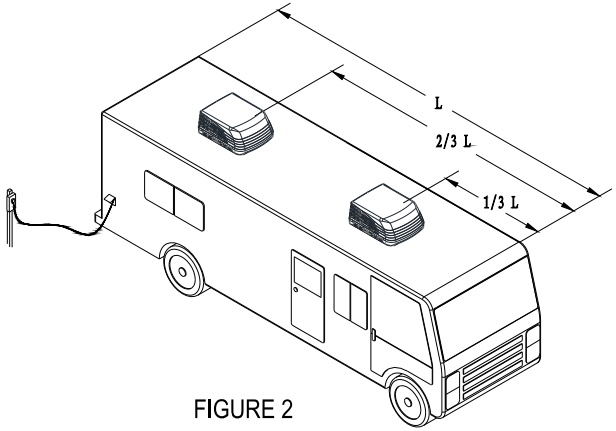


FIGURE 2

It is preferred that this air conditioner be installed in a relatively flat and level roof section measured with the RV parked on a level surface; however, up to 15° slant to either side, or front-to-bacj is acceptable.

C. POST LOCATION SELECTION:

1. Check for obstructions in the area where air conditioner will be installed. A minimum clearance of 18" is required for the rear section of the air conditioner to any other roof mounted object.
2. The roof must be capable of supporting 130 lbs while the RV is in motion. Normally, a 200 lbs static load design will meet this requirement.

3. ROOF PREPARATION

⚠WARNING

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

A. EXISTING 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 will be located. Use a good grade of all weather sealant.

B. NEW OPENING:

1. A 14-1/4" x 14-1/4"±1/8" opening must be cut through the roof and ceiling of the RV. It is recommended this opening be located between roof framework.
2. Mark a 14-1/4" x 14-1/4" square on the roof and carefully cut the opening.
3. Using the roof opening as a guide, cut the matching hole in the ceiling. See FIG.3.

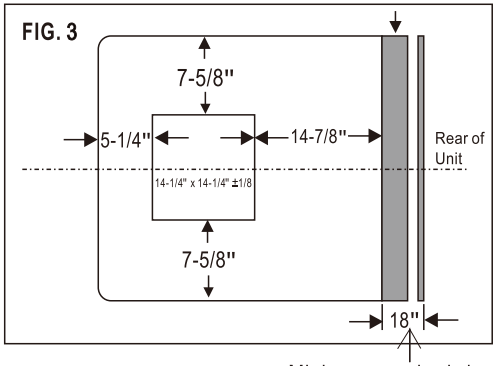


FIG. 3

4. Distance requirements between the front, left, right of the roof unit and the surrounding items and combustible material ≥11.8" ,Distance from the tail ≥18", Distance requirements around the indoor air diffuser ≥5.9".The above distance requirements also apply to the distance between the product and combustible surfaces.

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 12/3 Rmoex type supply line from the circuit breaker box to the Front of the roof opening.
   a. The power supply must be on a separate 20 amp Time Delay Fuse or HACR Circuit Breaker.
   b. Wiring must comply with all National, State and Local wiring codes.
   c. Make sure at least 15" of wire extend into the roof opening to ensure easy connections.
4. The opening must be framed to provide adequate support and prevent air from being drawn from the roof cavity. Lumber 3/4" thick or more and long enough to bridge the opening must be used. Remember to provide an entrance hole in the front of the opening for 115v, 12v, and thermostat wires. See FIG.4.

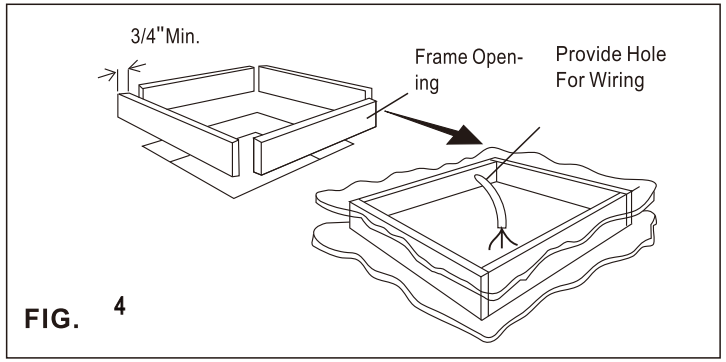


FIG. 4

5. The 14-1/4" x14-1/4"(+1/8) roof opening is part of the return air duct and must be finished in accordance with NFPA standard 501C, Standard for Recreational Vehicles, Section 2-7.

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 air conditioner/heat pump may leak into the interior causing damage to the product and RV