Owner's Manual

GUIDEBOOK TO ENJOYMENT OF
YOUR OPEN RANGE RV
RECREATIONAL VEHICLE

THE PURPOSE OF THE OPEN RANGE RV COMPANY OWNER'S MANUAL IS TO PROVIDE THE MOST CURRENT INFORMATION AVAILABLE CONCERNING OPEN RANGE RECREATIONAL VEHICLES. OPERATION AND MINOR MAINTENANCE IS THE MAIN FOCUS OF THIS BOOK.

MAINTENANCE OF YOUR RECREATIONAL VEHICLE IS IMPORTANT TO KEEPING YOUR COACH IN GOOD CONDITION. FAILING TO PROVIDE MAINTENANCE, AS SUGGESTED, COULD RESULT IN LOSS OF WARRANTY COVERAGE. REVIEW THE COPY OF YOUR OPEN RANGE RV COMPANY TOWABLE TRANSFERABLE LIMITED WARRANTY, WHICH HAS BEEN SUPPLIED TO YOU WITH YOUR WARRANTY REGISTRATION FORM.

ADDITIONAL MANUALS MAY BE SUPPLIED AND AVAILABLE BY THE MANUFACTURER OF THE COMPONENT AND/OR APPLIANCE. SEE THE INFORMATION PACKET IN YOUR COACH.

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CHAPTER 1
INTRODUCTION TO RV OWNERSHIP

Welcome to the world of recreational vehicle travel. The purchase of your OPEN RANGE RV COMPANY product allows you to enter this type of camping and leisure travel. Your coach has been designed and engineered to offer many comforts of home. OPEN RANGE RV COMPANY recreational vehicles are designed and constructed to be used as temporary living quarters for camping and travel uses. The coaches are not intended for hauling cargo.

This owner's manual was prepared to assist you in understanding the proper use and operation of various containment systems, servicing and maintenance of component parts, and explanation of your warranty protection. If this is your first RV travel coach, you will want to acquaint yourself with all aspects and information found in this manual plus manuals supplied by component manufacturers.

These materials will reflect the most current information available for the user. Some components and items may not be in your coach as they may be options on different models.

Keep this owner's manual in your recreational vehicle for handy reference. Get to know your new vehicle and how it operates. You should carefully read and understand these instructions, as well as information supplied by the manufacturers of separately warranted products. They contain important operating, safety, and maintenance instructions. If you have questions that are not adequately answered by this manual or other booklets, consult your dealer. If he cannot satisfactorily answer your questions, he will call our staff for additional information.

Every effort has been made to provide you with a safe, dependable product. Your vehicle complies with applicable requirements of Federal Motor Vehicle Safety Standards, State Regulations, Canadian Standards Associations (CSA and QAI) where applicable, and complies with requirements of ANSI Standard A119.2, the nationally recognized "Standard for Recreational Vehicles – Installation of Plumbing, Heating and Electrical Systems." The Recreational Vehicle Industry Association (RVIA) and Canadian Standards Association (CSA and QAI) periodically inspect our production lines and assist us in maintaining strict compliance with installation and safety standards for those systems. **Your follow-up with periodic safety inspections and a program of preventive maintenance is important for the continuation of safe and trouble-free operation.**

Camping is a great way to relax and enjoy the outdoors with your friends and family. Please remember to tread lightly on our beautiful land and leave only your footprints so that others may enjoy nature as much as you did.

SAFETY CONSIDERATIONS

The terms **NOTE**, **CAUTION** and **WARNING** have specific meanings in this manual as well as component manuals.

A **NOTE** provides additional information to make a step or procedure easier or clearer. Disregarding a NOTE could cause inconvenience, but would not be likely to cause damage or personal injury.

A **CAUTION** emphasizes areas where equipment damage could result. Disregarding a CAUTION could cause permanent mechanical damage. However, personal injury is unlikely.

A **WARNING** emphasizes areas where personal injury or even death could result from failure to follow instructions properly. Mechanical damage may also occur.

Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying OPEN RANGE RV COMPANY.

If NHTSA in addition receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer or OPEN RANGE RV COMPANY.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 or write to:

NHTSA
US Department of Transportation
Washington, DC 20590

You can also obtain other information about motor vehicle safety from the Hotline.

Safety When Emergency Stopping

It is wise to carry road flags and/or triangular warning devices to be used when necessary. When pulling off a highway, use your four way hazard lights as warning flashers, even if only to change drivers. Pull off the

roadway completely if at all possible to change flat tires or any other emergency needs.

Additional Safety Considerations

1. Sanitize the fresh water supply system periodically (see sanitizing instructions).
2. Keep water connection fittings from coming in contact with the ground or drain hose to reduce chance of contamination.
3. Enlist services of a qualified technician to fix gas or electrical appliances.
4. Always have a serviceable fire extinguisher placed in an easily accessible location.
5. Insure that tires are in good condition and properly inflated (see page 15). Watch tire inflation closely. Under-inflated tires will overheat. Overheated tires are a potential hazard as they may throw rubber and cause a blow-out. Check the tire pressure before each trip while the tires are cold.
6. Check and tighten the wheel lugs regularly (every 50 miles when new until 200 miles are reached and then check the lugs every 500 miles). [Refer to torque specifications, pg. 21]
7. Check the brakes in a safe area – not while traveling a busy highway.
8. Always block the trailer wheels solidly before unhitching.
9. Before leaving a camp area with a trailer in tow, insure:
    a. The safety pin or locking lever is seated.
    b. The breakaway wire is attached to the tow vehicle.
    c. All jacks are raised so that they cannot touch the ground.
    d. The 110-volt electrical cord is properly stored.
    e. The safety chains are connected.
    f. Put TV antenna away (if applicable).
    g. All interior lights are off.
10. Observe the warning labels attached to your vehicle concerning propane, water, electricity and loading.
11. Extinguish all campfires before leaving your campsite.

EXTENDED OR COLD WEATHER USE

Your OPEN RANGE RV COMPANY recreational vehicle has been built for enjoyment in a recreational manner. This recreational vehicle is not intended to be used as full-time living quarters.

1. For winter use in freezing conditions, more protection may be required. Use skirting and/or insulation below floor level to provide additional protection.

2. Remember, water freezes at 32° Fahrenheit whether fresh or drainage. Proper care must be used to protect any system at 32° F or lower. Local recreational vehicle dealers and campground personnel may be able to advise you on needed protection.
3. Energy requirements, such as propane and electrical supplies must be adequate. Protect your propane regulator from freeze-ups.
4. During cold weather you will experience more condensation than normal. Using ventilation or a dehumidifier may be needed.

CONDENSATION

Where it comes from, what causes it, and various solutions.

GENERAL RV TIPS

EFFECTS OF PROLONGED OCCUPANCY CONDENSATION AND HOW TO CONTROL IT

Topic:

Condensation

Claim Processing Information:

This is provided as common information and is not billable as a warranty repair.

Process:

If you plan to stay in your RV for longer than a few days, you need to understand how to properly manage and control the humid conditions and condensation that you may experience, especially in cold weather.

Modern RVs are much smaller than a house, and are tightly built. This means that the interior air will become saturated with moisture more quickly. The routine activities of a few people can put a lot of vapor into the air. In cold weather, this moisture may become visible as condensation.

Condensation happens naturally, just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surfaces of your RV during use in cold weather when the humidity of the interior air is high. Water vapor will condense on the inside of the windows and walls as moisture. In really cold weather, frost or ice may form.

It may also condense out of sight within the walls or the ceiling. If enough water collects in the wall or ceiling materials, it may cause water stains on the wall or ceiling surface. You might think that your walls or ceiling are leaking. You have a problem with condensation if you see these signs. You need to do something to reduce the moisture inside your RV.

If you locate your RV in an area that experiences cold winter temperatures, you may experience the effects of condensation. Even though you can't eliminate it completely, you can reduce or eliminate its effects.

Here e some frequently asked questions about condensation and some answers that will help you understand more about your RV and how to keep it comfortable

Q: - In cold weather, my windows and walls look like they're sweating. Is that condensation?

A: · Yes. Your windows are a good way to know if the humidity in your RV is too high. All r contains water vapor. When air is warm it can hold much more water than when it cold. When the air cools, the water vapor condenses back to a liquid. Since your w dows are usually cooler than the air, the water collects on the surface of the glass.

ACM Engeering and Enviromental Services recommends getting a humidity gauge. Humidity levels need to be 45% or lower.

Q: - Isn't the insulation in my RV supposed to keep my RV warm? Is something wrong with my RV?

A: - Yes, your insulation is designed to keep your RV comfortable in cold weather. Not only do you have superior insulation, but also your RV is tightly built to close manufacturing tolerances. Your RV really holds the air in. And no, there is nothing wrong with your RV. Quite the opposite is true. Most homes have large cracks and spaces that allow moist air to escape to the outside, but the windows and doors in your RV are tightly sealed. Air just has a hard time getting through to the outside.

Q: - Where does all the water come from?

A: - Moisture in the air comes from many sources. Some of the most common are:

Cooking - Meals prepared for a family of four can add up to a gallon of water per day into the air from cooking.

Bathing - An average shower puts between 1/4 and 1/2 pounds of water into the air. It takes four tub baths to equal that amount.

Dishwashing - Doing the dishes for a typical day's meals can add up to one pound of water to the air.

Floor mopping - When an 8' X 10' kitchen floor is mopped and rinsed, almost 2-1/2 pounds of water is released into the air.

Clothes drying - After 10 pounds of clothes have been washed and spin-dried in a washer, they still contain about 10 pounds of water. If these clothes are dried inside, that water is released into the air in the RV.

Gas appliances - When gas is burned, carbon monoxide, carbon dioxide, nitrogen and water are given off into the air. For every 1000 cubic feet of gas burned, nearly 88 pounds of water is released into the air.

Humidifiers - Humidifiers are designed to put moisture into dry air - up to two pounds per hour. So in a 24-hour period, an uncontrolled humidifier can put almost 50 pounds of water in the air.

Houseplants and aquariums - Plants give off almost as much water as you put on them. Open aquariums permit higher rates of evaporation than closed types.

People and animals - A large source of water in the RV is the inhabitants themselves. A family of four can put up to 12 pounds of water into the air per day through breathing and perspiration.

Q: - What will all this water do to my RV?

A: - The least it will do is fog your windows. If it is really cold outside, frost or even clear ice could form on the inside of the glass. Excessive moisture in the air could show up as water running down or dripping off walls, ceilings or fixtures. It may look like your roof or windows are leaking. This water may stain woodwork, carpeting, ceiling panels, or even furniture.

However, the most damage is caused by water you can't even see. Water will penetrate almost any material - except glass and metals. Water vapor in the air always wants to move toward dry air. Scientists call this vapor pressure action. It will go through walls, floor covering, plywood, paint - just about anything. The water that gets trapped in these materials can cause warping, mildew, paint failure and rotting. The damage caused by excessive humidity can be invisible, and worse, expensive to fix. Please remember that this damage is not covered under the warranty.

Q: - What can I do to reduce or eliminate condensation problems in my RV?

A: - The two most important things are:

Reduce moisture released into the air and increase ventilation

To reduce moisture released inside the RV:

1. Run the range vent fan when cooking and the bath vent fan (or open the bath vent) when bathing to carry water vapor out of your rv. Avoid making steam from excessive boiling or use of hot water. Remove water or snow from shoes before entering to avoid soaking the carpet. Avoid drying overcoats or other clothes inside the rv. The water drying out of the clothes goes into the air.

2. Vent appliances to the outside. Your clothes dryer should always be vented according to the dryer manufacturer's installation instruction, if required. Some dryers are ventless and do not require a vent to the outdoors. Check the vents periodically to be sure they are not blocked.
3. Avoid placing pans of water on the stove or in heat ducts to raise the humidity.
4. If you operate or use vaporizing inhalers, or similar devices, always provide adequate ventilation.
5. Never use open flame gas or kerosene-burning heaters indoors. These devices release water into the air, and the exhaust gases contain poisonous substances.

To increase ventilation:

1. Use the kitchen and bath exhaust fans when cooking and bathing. Let them run for a while after a bath or meal.
2. Ventilate with outside air. Partially open one or more roof vents and/or windows to provide circulation of outside air into the interior. While this ventilation will increase furnace heating load, it will greatly reduce, or eliminate, condensation. Even when it is raining or snowing, outside air will be far drier than interior air and will effectively reduce condensation.
3. Avoid taping windows or doors tightly closed. This will prevent any air movement and will make the condensation problem worse.
4. Ventilate closets and cabinets. During prolonged use in very cold weather, leave cabinet and closet doors partially open to warm and ventilate the interiors of storage compartments built against exterior walls. The airflow will warm the exterior wall surface, and will reduce or eliminate condensation, and prevent possible ice formation. Avoid crowding closets or wardrobe space. Overstuffed closets restrict airflow.
5. Stock kitchen and bath cabinets to allow free air circulation.
6. Open drapes over windows as often as possible and convenient.
7. Install a dehumidifier appliance. During prolonged, continuous use, a dehumidifying appliance may be more comfortable and effective in removing excess moisture from the interior air. Use of a dehumidifier is not a cure-all. Ventilation and moisture reduction are the most effective ways to eliminate excess moisture. However, operation of a dehumidifier device will reduce the amount of outside air needed for ventilation. Heating load on the furnace will be reduced, and the interior will be less drafty.
8. Control the interior heat. If the heat is a dry heat, the humidity will tend to be lower. Here are some tips on controlling humidity with heat:

Keep registers and the furnace blower clean and unobstructed. This helps air circulation. Do not operate a humidity device on your furnace.

During cold weather and even in short term occupancy, condensation frequently forms on ceiling vents and may even accumulate to the point of dripping onto surfaces below. This is frequently misinterpreted as a leaking roof vent but is most often condensation drippage. Follow the steps listed in the preceding section to control moisture condensation, and protect surfaces with plastic

⚠ CAUTION

Continuous living in your recreational vehicle could cause accelerated wear to components beyond normal recreational use.

Uncontrolled condensation can cause dampness, mildew, etc., inside your recreational vehicle. Be sure to make strong efforts to control condensation.

CHAPTER 2
SERVICE PROCEDURES

BASIC SERVICE PROCEDURES

OPEN RANGE RV COMPANY has a strong interest in maintaining top quality customer relations with owners. By producing high quality products, we want to assure our customers of our support with parts and service availability. Our dealer network is the first choice to serve and supply your needs for your recreational vehicle. Our authorized dealers will assist in providing service maintenance needs plus parts, options, and information concerning your recreational vehicle.

Should you experience a problem with service availability, please follow the steps in the order listed below.

1. Contact your selling dealer's service department for an appointment. Describe to the best of your knowledge the nature of the problem. Please keep appointments to establish a good, workable relationship.
2. Contact the owner or general manager of the dealership should the initial attempt fail with the service department.
3. Contact:

   Customer Relations Department
   OPEN RANGE RV COMPANY
   3195 N. S.R. 5
   Shipshewana, IN 46565

   Phone: (260) 768-7771
   Fax: (260) 768-4890
   Website: http://www.openrangerv.com

   Give all the above information as requested along with the serial number of the coach in question. We will make every attempt to resolve your problem.

Please bear in mind that most problems arise from misunderstandings concerning warranty coverage and service. In most instances, you will be referred to the dealer level and your concerns will be resolved with the dealer's facilities and personnel.

Dealer

Your authorized OPEN RANGE RV COMPANY dealer has performed a PDI (pre-delivery inspection) on your recreational vehicle. Since your dealer is authorized to sell OPEN RANGE RV COMPANY products, he

is also there to supply parts, optional equipment, and provide service repairs, warranty or otherwise as needed.

First choice for warranty repairs is your selling dealer. Other dealers can be used, however, prior approval is required.

Some recreational vehicle dealers may be authorized service centers for certain manufacturers of products warranted separately. Check with your dealer before contacting anyone else to reduce delays. If the dealer is not an authorized service center for the product in question, he can assist you in obtaining authorized service.

Factory

Service repairs can be performed at the manufacturing facility at Shipshewana, Indiana. Should your OPEN RANGE RV COMPANY product be in need of major repairs and your dealer recommends factory repairs, please follow the steps listed below for such work.

1. Your dealer **must** make an appointment with service personnel at the factory PRIOR to your arrival.
2. Any freight costs, as listed on warranty coverage, are the responsibility of the owner as listed in the warranty coverage schedule.

Parts

Stocking of parts varies from dealer to dealer. Any authorized dealer can order any required part to be shipped to his dealership or have the part “drop-shipped” to your residence. All parts are obtained through authorized OPEN RANGE RV COMPANY dealers only.

Owner’s Responsibility

When owning and using a recreational vehicle, it is important to perform regular and normal maintenance to prevent undesired deterioration of your coach. Weather elements play an important function on sealants and other components requiring normal maintenance.

As an owner and operator, it is your responsibility and obligation to inspect and return your coach to an authorized dealer for repairs as required. Your authorized selling dealer is always your first choice and he certainly has continued interest in your satisfaction. As your manufacturer, we recommend that inspection and service be performed by your selling dealership.

If you are traveling and are unable to locate an authorized Open Range RV Company dealer, or an authorized dealer for the component needing service, please call our customer service office at (260) 768-7771. Service at a non-authorized dealer MUST have prior authorization. You will be asked to return any mechanical parts replaced before reimbursement

consideration is made. Unauthorized or improper repairs may void the warranty of that component. Always keep your owner's manual along with a copy of your warranty registration with you when traveling.

Seasonal Site

When placing your unit on a camp site in the spring and returning it in the fall to your home, it's classed as a "seasonal site."

Performing repair work on such a site is not recommended for numerous reasons; available parts, tools, space, weather conditions, etc.

Any service repairs which require a service technician also require the unit to be taken to a service facility, preferably your selling dealer.

Warranty coverage does not include trip or service call costs for such a trip. It is the owners responsibility to provide for such costs.

TOWABLE TRANSFERABLE LIMITED WARRANTY

Fifth Wheel / Travel Trailer
Two Year Limited Warranty/Two Year Structural

SUMMARY OF WARRANTY:

Open Range RV Company warrants the structure of every towable recreational vehicle or truck camper purchased from an authorized OPEN RANGE RV COMPANY dealer to the first retail consumer and first transferee, for a period of two (2) years, to be free from substantial defects in materials and workmanship when used for its intended purpose. "Defect" means the failure of the unit and/or the materials to conform to Open Range design and manufacturing specifications and tolerances. The warranty period begins on the date of the original purchase or the date the unit is first placed in service, whichever is earlier. This Towable Transferable Limited Warranty ["TTLW"] may be transferred from the first retail consumer to the first transferee during the warranty period with proper application and the appropriate processing fee charged by OPEN RANGE RV COMPANY. For purposes of this TTLW, the term "structure" includes the interior and exterior sidewalls, floor, roof, and frame.

EXCLUSIONS FROM WARRANTY:

Excluded from covered under the TTLW are: (1) items added, changed, or modified after the unit left the possession of OPEN RANGE RV COMPANY; (2) units used for any commercial purpose; (3) units used for full-time residential use; (4) wear and tear caused by normal usage by the consumer, including but not limited to fading or discoloration of soft goods [e.g., tents, upholstery, drapes, carpet, vinyl, screens, cushions, and mattresses] fading or discoloration of exterior or fiberglass components, tears, punctures, soiling, mildew, mold, and the effects of moisture condensation inside the unit; (5) the effects of alteration, tampering, mishandling, neglect, abuse, misuse, weather, acts of nature, acts of God, or environmentally caused conditions and/or corrosive atmospheres that promote rusting, sealant deterioration, oxidation, or pitting; (6) minor imperfections that do not interfere or affect the suitability of the unit for its intended use; (7) the effects of consumer's or transferee's failure to perform normal and routine maintenance [e.g., inspections, lubrication, adjustments, tightening of screws and bolts, tightening of lug nuts and wheels, sealing rotating, cleaning, or other damages resulting from failing to follow the maintenance schedule and procedures in the owner's manual]; (8) damages resulting from misalignment or adjustments to axles or spindles caused by improper maintenance, modification, loading, unloading, road hazards, road defects, off road travel, or tire failures; (9) damages caused by the negligent or intentional use or misuse of the unit by the consumer or transferee, including but not limited to occurrences while towing the unit; (10) claims made for alignment or adjustment of patio doors [Note: any unit with a patio door is not intended to be towed like a travel trailer, and must be permanently parked on a lot. If such a unit is towed this TTLW is voided in regard to the patio door and the surrounding structures]; (11) loss or damage caused by a person or business as a result of transporting the unit after sale to the consumer, delivering the unit, or parking the unit; (12) loss or damage to the plumbing system caused by freezing; (13) claims for personal injuries of any type; (14) costs of transportation of the unit for repairs; and (15) components that are warranted separately by another manufacturer [the warranty provided by a component manufacturer is the sole responsibility of the manufacturer, and OPEN RANGE RV COMPANY does not warrant those components. Please refer to the warranties issued by the component manufacturers for the terms and conditions of such warranties].

TOWABLE TRANSFERABLE LIMITED WARRANTY

Fifth Wheel / Travel Trailer
Two Year Limited Warranty / Two Year Structural
(CONTINUED)

TO OBTAIN WARRANTY SERVICE:

Warranty service may be performed only at OPEN RANGE RV COMPANY or at OPEN RANGE RV COMPANY authorized dealers and service centers. Contact OPEN RANGE RV COMPANY for a list of authorized dealers and service centers. REPAIRS OR REPLACEMENTS BY UNAUTHORIZED DEALERS OR SERVICE CENTERS WILL VOID THIS TTLW. If the consumer believes that a claimed defect is covered by this TTLW, contact must be made with an authorized dealer or service center WITHIN THE WARRANTY PERIOD. Sufficient information must be given to attempt to resolve the claimed problem. Should OPEN RANGE RV COMPANY determine that repair or replacement is appropriate, the consumer must deliver the unit to the dealer or service center as directed. Delivery shall occur no later than thirty (30) days after the authorization for repair or replacement. Do not deliver your unit to OPEN RANGE RV COMPANY, or an authorized dealer or service center without prior authorization. All costs incurred by the consumer for transportation for warranty service shall be the sole responsibility of the consumer. The dealer or service center shall repair or replace any defective component or material within a reasonable time. Should the defective component or material not be repaired or replaced within said period of time, then the consumer must contact OPEN RANGE RV COMPANY by CERTIFIED MAIL at the below address with a written description of the claimed warranted defect and the efforts to remedy it. FAILURE TO SO NOTIFY OPEN RANGE RV COMPANY IN THIS REGARD SHALL RENDER THIS TTLW VOID AS TO THE CLAIMED DEFECT. After receipt of such notice, OPEN RANGE RV COMPANY shall repair or replace such defective component or material within a reasonable time. The scheduling of warranty work at an authorized dealer or service center is not controlled by OPEN RANGE RV COMPANY and delays may be experienced. OPEN RANGE RV COMPANY is not responsible for loss of use of the unit, expenses for fuel, telephone, food, lodging, travel, loss of income or revenue, or loss of or damage to personal property.

DISCLAIMER AND LIMITATIONS OF WARRANTIES:

THIS TTLW IS THE ENTIRE WARRANTY AUTHORIZED AND OFFERED BY OPEN RANGE RV COMPANY. THERE ARE NO WARRANTIES OR REPRESENTATIVES BEYOND THESE EXPRESSED IN THIS WRITTEN AGREEMENT. THIS TTLW CANNOT BE AMENDED BY ANY DEALER, SALES PERSON OR AGENT. NEITHER OPEN RANGE RV COMPANY, NOR ITS DEALERS, SHALL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND OR ANY OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE OR USE OF THIS PRODUCT, WHETHER BASED IN CONTRACT, TORT, STRICT LIABILITY, EQUITY, OR ANY OTHER THEORY, EVEN IF OPEN RANGE RV COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. OPEN RANGE RV COMPANY'S ENTIRE LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE COMPONENT OR MATERIAL, AT OPEN RANGE RV COMPANY'S SOLE OPTION. ANY ACTION TO ENFORCE THESE EXPRESS OR IMPLIED WARRANTIES SHALL NOT BE COMMENCED MORE THAN NINETY (90) DAYS AFTER THE EXPIRATION OF THE TWO YEAR WARRANTY COVERAGE DESIGNATED ABOVE. SOME STATES DO NOT ALLOW A REDUCTION IN THE STATUTE OF LIMITATIONS, SO THIS REDUCTION MAY NOT APPLY TO YOU.

TOWABLE TRANSFERABLE LIMITED WARRANTY

Fifth Wheel / Travel Trailer
Two Year Limited Warranty / Two Year Structural
(CONTINUED)

THE UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS HEREBY EXCLUDED IN ITS ENTIRETY FROM APPLICATION TO THIS TTLW.

THE FOREGOING TTLW, AND THE REMEDIES THEREUNDER, ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY OPEN RANGE RV COMPANY. THIS TTLW GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY DEPENDING ON LOCAL LAW. SOME STATES LIMIT OR PROHIBIT LIMITATIONS OF WARRANTIES, SO THE ABOVE MAY NOT APPLY TO YOU. TO THE EXTENT YOUR STATE DOES NOT ALLOW THE DISCLAIMER OF IMPLIED WARRANTIES, ANY AND ALL SUCH IMPLIED WARRANTIES ARE HEREBY LIMITED IN DURATION TO THE TERM OF THIS TTLW AND ARE LIMITED IN SCOPE OF COVERAGE TO THOSE PORTIONS OF THE UNIT COVERED BY THIS TTLW.

MISCELLANEOUS:

No repair or replacement effected shall cause any extension or renewal of the warranty period. OPEN RANGE RV COMPANY may make parts and/or design changes from time to time without notice and repairs or replacements may be made with new or different parts. OPEN RANGE RV COMPANY reserves the right to make changes in the design or material of its products without incurring any obligation to incorporate such changes in any product previously manufactured. At OPEN RANGE RV COMPANY's sole option, any dispute concerning any warranted defect may be resolved through mediation or arbitration. In the case of arbitration, an arbitrator from the American Arbitration Association (AAA) shall be selected. This TTLW shall be governed by the laws of the State of Indiana, and any legal action shall be brought only in the Circuit or Superior Court of LaGrange County, Indiana. A recreational vehicle and the products installed in it will require care and maintenance attention by the owner and occupants. Please read and follow all care and maintenance manuals and instructions supplied with your recreational vehicle. Failure to do so can result in this TTLW being voided.

WARRANTY REGISTRATION AND CONTACT INFORMATION:

The warranty registrations for component parts should be completed and delivered in accordance with the instructions contained therein. The TTLW registration must be completed and returned to OPEN RANGE RV COMPANY within fifteen (15) days of delivery of the unit to the consumer. Failure to do so can void this TTLW or cause delays in obtaining benefits. The TTLW registration, and all inquiries, must be directed to:

OPEN RANGE RV COMPANY
Warranty Department
3195 N. S.R. 5 • Shipshewana, Indiana 46565
Telephone: (260) 768-7771

CHAPTER 3
USING YOUR RV

In this chapter you will find three areas of useful information to assist you with correct **equipment**, **traveling**, and finally, actually **using your recreational vehicle**.

EQUIPMENT

Tow Vehicle

Begin your camping experiences by obtaining a tow vehicle which will adequately transport your recreational vehicle to and from your chosen destinations. Your most important measuring tool is the GVWR, Gross Vehicle Weight Rating, to cross match the capability of your selected tow vehicle.

A second factor is GCWR, Gross Combined Weight Rating, which refers to the total weight of the tow vehicle and any vehicle in tow as a “combined” weight. This information, supplied by the tow vehicle manufacturer, is related to the capability of the tow vehicle.

The condition of the suspension in your tow vehicle is also an important factor. Make sure your tow vehicle is in good operating condition and follow the factory recommended maintenance guidelines.

Hitches – Travel Trailer

After obtaining your tow vehicle, it is very important to choose, and have installed, a correct hitch system with weight distributing bars to accommodate your coach, if so required. This selection and installation should be done by a professional hitch service center, which may or may not be your selling dealer. Sway controls may be needed based on size and weight of the coach.

Weight distributing hitches apply leverage between the tow vehicle and trailer. This assists in equalizing the weight between vehicles, resulting in both vehicles traveling level. The condition of the tow vehicle’s suspension system will affect the towing performance capability of your equipment.

⚠ CAUTION

Trailers with tandem axles need to travel as level as possible, avoiding different weights on each axle plus handing conditions.

⚠ CAUTION

Using an oversized or undersized hitch can cause damage to the frame of your travel trailer or tow vehicle.

Hitches – Fifth Wheel

The best type of hitch is one that is bolted thru floor and has brackets to attach to main frame members on truck.

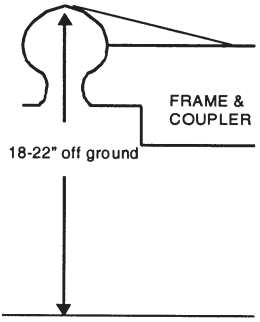
Before installing your hitch be aware of the clearance needed between the truck cab and center of hitch pin. This is very important on short bed trucks.

Hitch Height Specifications – Fifth Wheel

There is no recommended hitch height for fifth wheels. The pin box is adjustable at two inch intervals for variance in trucks and their suspension systems. Please attempt to travel with your truck and coach as near level as possible.

Hitch Height Specifications – Travel Trailer

Due to axles being either straight or drop bars, the ball height will vary. To find the correct height for ball hitch, set your trailer on a flat surface in level position. Measure from the inside of the ball socket to the ground, approximately 18 to 22 inches as shown, for correct spacing. You may wish to add 1 to 2 inch to this amount to compensate for sag of suspension of the tow vehicles when hooked to tow vehicles.



Hook-Up – Travel Trailer

Hooking up your travel trailer is not difficult and gets easier with practice. The following procedure will help you until you become more experienced.

1. To raise the tongue of trailer above the hitch ball on hitch, turn the crank on the jack.
2. Open the coupler latch.
3. Back the tow vehicle into proper position.
4. Turn the crank on the jack to lower the coupler onto the ball hitch.
5. Close the coupler latch after completely seated.
6. Install weight distributing bars (equalizer), when required, as recommended by hitch supplier.

7. Retract the tongue jack to its maximum height.
8. Attach the cable for the breakaway switch to the tow vehicle.
9. Attach safety chains as per your state laws.
10. Plug in your 12-volt, seven way electrical connector from the tow vehicle to the trailer connector.
11. Below are listed numerous items that should be inspected and tested before traveling:
    - All lights working on outside of coach.
    - Stabilizer jacks in retracted position.
    - Steps in retracted position.
    - Refrigerator door latched completely.
    - Loose items in secure position.
    - Test brakes for operation before entering roadway.

The Safety Chain – Travel Trailer

Safety chain requirements will vary from state to state. The chain supplied with your coach meets SAE requirements for maximum gross trailer weight.

1. Cross the left chain under the coupler and attach to the right mounting slot in the trailer hitch.
2. Repeat step one with the right chain. Slack for each length should be the same but not more than necessary to permit the vehicle to turn at their minimum radius.

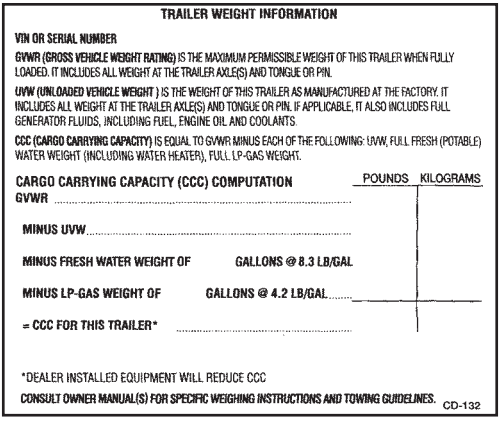
⚠ CAUTION

Remember – always have the safety chain attached to tow vehicle, as required in your state.

TRAVELING

Weights

For safety reasons and federal regulations OPEN RANGE RV COMPANY desires to provide the most accurate weight specifications possible to our new owners. On the exterior left front corner of the coach you will find the Federal “Vehicle Identification Number” sticker. Required by the federal government, this tag supplies much information concerning your coach, such as: VIN number, date/month of manufacture, tire size rating, plus information about weights as described below.



TRAILER WEIGHT INFORMATION

VIN OR SERIAL NUMBER

GVWR (GROSS VEHICLE WEIGHT RATING) IS THE MAXIMUM PERMISSIBLE WEIGHT OF THIS TRAILER WHEN FULLY LOADED. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN.

UVW (UNLOADED VEHICLE WEIGHT) IS THE WEIGHT OF THIS TRAILER AS MANUFACTURED AT THE FACTORY. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN. IF APPLICABLE, IT ALSO INCLUDES FULL GENERATOR FLUIDS, INCLUDING FUEL, ENGINE OIL AND COOLANTS.

CCC (CARGO CARRYING CAPACITY) IS EQUAL TO GVWR MINUS EACH OF THE FOLLOWING: UVW, FULL FRESH (POTABLE) WATER WEIGHT (INCLUDING WATER HEATER), FULL LP-GAS WEIGHT.

CARGO CARRYING CAPACITY (CCC) COMPUTATION	POUNDS	KILOGRAMS
GVWR		
MINUS UVW		
MINUS FRESH WATER WEIGHT OF **GALLONS @ 8.3 LB/GAL**		
MINUS LP-GAS WEIGHT OF **GALLONS @ 4.2 LB/GAL**		
= CCC FOR THIS TRAILER*		

*DEALER INSTALLED EQUIPMENT WILL REDUCE CCC

CONSULT OWNER MANUAL(S) FOR SPECIFIC WEIGHING INSTRUCTIONS AND TOWING GUIDELINES. CD-132

Gross Axle Weight Rating (GAWR): is the value specified as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces. One of five components will determine this rating, tires, axle, springs, brakes, or wheels. One of these five is generally rated slightly less than the others.

Gross Vehicle Weight Rating (GVWR): is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin on Fifth Wheel. This includes ALL cargo, options and liquids.

Unloaded Vehicle Weight (UVW): is the weight of this trailer as manufactured at the factory. It includes all weight at the trailer axle(s) and tongue or pin. If applicable, it also includes full generator fluids, including fuel, engine oil and coolants.

Cargo Carrying Capacity (CCC): is equal to the GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater, and full propane weight.

Weighing Vehicle – Loaded or Unloaded

The proper method to weigh the coach is to use a truck scale. Place the coach axles (tires) and tongue jack or landing jacks with front supports, 12” to 24” from the edge. Unhook the tow vehicle and move forward 6” to 8”. Now record total weight. Re-hook the tow vehicle and remove the weight from the front support. Be sure no part of tow vehicle is on the scale. Now record the axle weight only. The difference between the two weights is the hitch weight.

Loading the Trailer – Distribution

Your recreational vehicle has been engineered to make maximum use of the available space for living and storage areas. The equipment and

supplies you take along while traveling can be carried safely, provided the additional weight is distributed properly. Proper weight distribution within your trailer is an important factor in safety and efficiency of your trailer brakes, hitching, and how your tow vehicle will pull the trailer.

Lightweight and bulky items such as paper products, bedding, clothing, etc., should be stored in overhead cabinets and closets. Heavy items such as cooking utensils should be placed in lower cabinets. Canned goods need to be in a pantry, if so equipped, or in lower cabinets. Also, heavy items should be secured to avoid shifting during travel.

A reasonable principle in loading your coach is for every two pounds of weight loaded in front of the axle, one pound of weight must be loaded behind the axle. Also remember, improper side-to-side loading affects spring condition.

Excess weight behind the axle lightens the hitch weight and will tend to magnify any sway that may occur when passing trucks or when gusty winds are present. Uncalculated weight can and will effect road performance.

⚠ CAUTION

DO NOT overload your unit. Please follow the GVWR when loading your Open Range recreational vehicle to avoid damages.

Towing

In towing your trailer or fifth wheel, you need to recognize the extra weight behind your vehicle. Below is a list of things which you need to remember while traveling.

1. With the trailer attached you will have slower acceleration and will require more distance to stop.
2. Be sure you have enough area at corners when turning, as wider turns are necessary. Be sure to use your turn signals for your own safety and the safety of others.
3. In passing or changing lanes remember you will need a longer distance to pass.
4. Use your rearview mirrors frequently to observe your trailer and traffic conditions.
5. When being passed by a large truck or bus, be prepared for displaced air as it may cause you to sway slightly.

6. When climbing steep, long grades and again while descending, user lower gears even before it seems necessary. Use your brakes smoothly and evenly.
7. Remember to drive more slowly on wet and icy highways to keep control of your vehicle.

Tires

All OPEN RANGE RV COMPANY towable coaches are equipped with appropriate tires for recreational vehicles. Tires are radial in design using components to offer excellent strength and mileage in all kinds of weather conditions.

Tires on your vehicle(s) are one of the most important components of the towing package. Without inflated tires you will not be moving anywhere.

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires

This booklet presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

Safety First – Basic Tire Maintenance

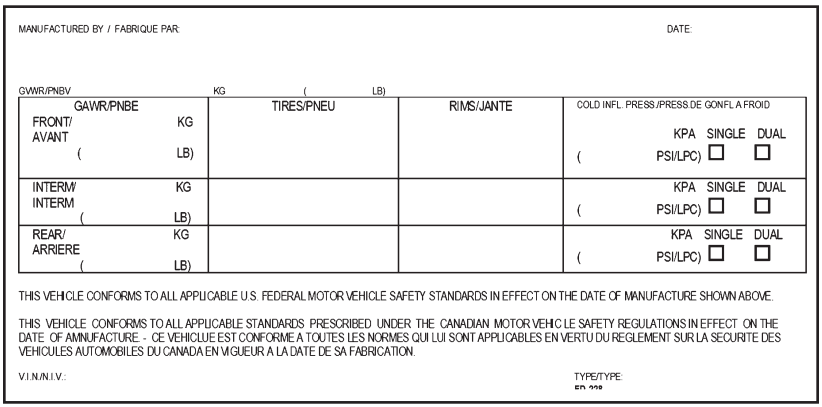
Properly maintained tires improve the steering, stopping, traction, and load carrying capability of your vehicle. Under inflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper

tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW – the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear axle weight ratings (GAWR – the maximum weight the axle systems are designed to carry).



MANUFACTURED BY / FABRIQUE PAR: DATE:

GVWR/PNBV KG (LB)

GAWR/PNBE	TIRES/PNEU	RIMS/JANTE	COLD INFL. PRESS./PRESS.DE GONFL A FROID
FRONT/ AVANT KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐
INTERM/ INTERM KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐
REAR/ ARRIERE KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

THIS VEHICLE CONFORMS TO ALL APPLICABLE STANDARDS PRESCRIBED UNDER THE CANADIAN MOTOR VEHIC LE SAFETY REGULATIONS IN EFFECT ON THE DATE OF AMNUFACTURE - CE VEHICLUE EST CONFORME A TOUTES LES NORMES QUI LUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.

V.I.N./N.I.V.: TYPE/TYPE:

Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure – measured in pounds per square inch (psi) - a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilo pascals (kPa), which is the metric measure used internationally.)

Vehicle manufacturers determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the “maximum permissible inflation pressure” on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Checking Tire Pressure

It is important to check your vehicle’s tire pressure at least once a week for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine under inflation by visual inspection.

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when tires are cold or compensate for the extra pressure in warm tires.

Steps for Maintaining Proper Tire Pressure

1. Locate the recommended tire pressure on the vehicle’s tire information placard, certification label, or in the owner’s manual.
2. Record the tire pressure of all tires.
3. If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
4. If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These “missing” pounds of pressure are what you will need to add.
5. At a service station, add the missing pounds of air pressure to each tire that is under inflated.
6. Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is under inflated, fill it to the recommended cold inflation pressure indicated on your vehicle’s tire information placard or certification label. While your tire may

still be slightly under inflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly under inflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

⚠ CAUTION

It is recommended that the tire pressure be checked at the beginning of each journey, and at least once per week to obtain the maximum life of the tires.

Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placards, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in tread wear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

Tire Balance and Wheel Alignment

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

Tire Repair

The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole.

Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

Tire Fundamentals

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

U.S. DOT Tire Identification Number – This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used – The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating – This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure – This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Additional Information on Light Truck Tires

Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT – The "LT" indicates the tire is for light trucks or trailers.

ST – An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold – This information indicates the maximum load and tire pressure when the tire is used as a dual; that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Load Range – This information identifies the tire's load-carrying capabilities and its inflation limits.

Vehicle Load Limits

Determining the load limits of a vehicle includes more than understanding the load limits of the tires alone.

[For TT] On a trailer, there is a Federal certification label that is located on the forward half of the left (road) side of the unit.

The certification label will indicate the vehicle's gross vehicle weight rating (GVWR). This is the most weight the fully loaded vehicle can weigh. It will also provide the gross axle weight rating (GAWR). This is the most particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

[For TT] In the same location as the certification label described above, there is a vehicle placard. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity.

Cargo Capacities

[For TT] Cargo can be added to the vehicle, up to the maximum weight specified on the placard. The combined weight the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded vehicle can not exceed the stated GVWR.

Water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the RV before it is loaded with cargo and is not considered part of the disposable cargo load. Water however, is a cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount or cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel and camping needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your RV dealer to discuss the weighing methods needed to capture the various weights related to the RV. This would include weights for the following: axles, wheels, hitch or pin (in the case of a trailer) and total weight.

How Overloading Affects Your RV and Tires

The results of overloading can have serious consequences for passenger safety. Too much weight on your vehicle's suspension system can cause

spring, shock absorber, or brake failure, handling or steering problems, irregular tire wear, tire failure or other damage.

An overloaded vehicle is hard to drive and hard to stop. In cases of serious overloading, brakes can fail completely, particularly on steep hills. The load a tire will carry safely is a combination of the size of tire, its load range, and corresponding inflation pressure.

Excessive loads and/or under inflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure.

It is the air pressure that enables a tire to support the load, so proper inflation is critical. Since RVs can be configured and loaded in many ways, air pressures must be determined from actual loads (determined by weighing) and taken from the load and inflation tables provided by the tire manufacturer. These air pressures may differ from those found on the certification label. However, they should never exceed the tire limitation for load or air pressure. If you discover that your tires cannot support the actual weights, the load will need to be lightened.

Tire Safety Tips

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

Note: Tires are warranted by the manufacturer of their respective brand and are to be serviced and warranted by a service center. Contact your dealer for information on service centers for tires.

How to Change a Tire

To change a tire on your coach, place a jack under the main rail of frame. You may wish to break the lug nuts loose before raising coach. Be sure to block trailer to prevent coach or jack movement. Do not remove nuts from lug bolts until tire is free from ground.

Wheel Lug Torque Specifications

When the wheels are installed on your recreational vehicle, the lug nuts must be tightened at 90-120 foot pounds of torque. Powder coat painted wheels may require more torquing attempts due to thickness of paint. You must re-torque the wheel lugs at 50 and 200 miles. A decal on the wheel may require torquing earlier.

After your first trip, check the wheel lugs periodically for safety. The wheel lugs should then be checked after winter storage, before starting a trip or following extensive braking. The size of bolts or nuts is 13/16 inch. **Over torquing wheels is as dangerous as under torquing and can damage the wheel.**

Brakes – Electrical

Electric brakes on your recreational vehicle are designed to work in conjunction with the hydraulic brakes on your tow vehicle. This means to have the best brake performance on both systems, the trailer and the tow vehicle must perform and operate together. Any attempt to use either brake system alone will cause accelerated wear and damage.

A brake control must be installed in your tow vehicle to activate electric brakes with 12-volt power either manually or by foot brake pedal.

Two types of controllers are available. First is the “hydraulic” which operates through a steel line attached to the master cylinder of the tow vehicle’s brake system. The second type is an “electronic” controller, operating completely on electrical current. See the operating instructions provided with the controller for adjustment and operation procedures.

Your battery in the tow vehicle is your primary power source to operate the brakes in your towable trailer. Keep your battery and charging system in working operation to ensure available energy when required.

Power from the battery is sent to the controller, the “switch” to provide the correct amount of current to brake assemblies to the coach. Your controller is to be installed below the dash board of your tow vehicle. Use the foot pedal control for general operation on combined use of both brake systems. Manual control is to be used only in special situations, such as slow movement or icy road conditions. In open position, electrical current will flow to brake assemblies.

Wiring to operate your brakes must be sized in both vehicles, suggesting a minimum of 14 gauge. Your camper has 14 gauge from front end to brakes. Brake assemblies are wired in parallel, never in a series. Being parallel, there will be equal voltage and amperage at each brake assembly for equal braking capability and/or performance.

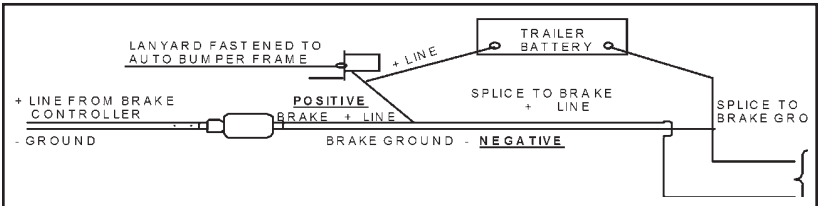
When applying brakes to stop the trailer, begin pressing slowly to avoid quick and sudden stops, or possible “jack-knife” when wet or slippery. Use lower gear ranges to minimize the need of brakes during extended or steep downgrades.

WHEN YOUR COACH IS NEW IT IS IMPOSSIBLE TO ADJUST YOUR BRAKE SHOES PRECISELY. IT TAKES APPROXIMATELY 1000 MILES AND/OR 50 MEDIUM TO HEAVY STOPS TO “BURNISH”, FIT, OR SEAT THE SHOES TO THE DRUM. AFTER THIS INITIAL BREAK-IN YOU MUST ADJUST YOUR SHOES ACCURATELY FOR BEST PERFORMANCE AND TO INCREASE THEIR DURABILITY. THIS IS NORMAL MAINTENANCE.

Breakaway Switch

The breakaway switch is a safety part of your trailer’s electric brake system. The very instant a breakaway occurs, the pull pin which is linked to the tow vehicle is pulled from the switch. The two contacts automatically close to complete the electrical circuit and apply the trailer brakes. This system will apply the brakes of the trailer should it break away from the tow vehicle. A 12-volt battery installed on the coach is required to power the breakaway switch.

NEVER use this breakaway switch and trailer brake system as a parking brake. There would be a high amp draw on battery and converter, potentially causing damaged wiring, connectors, and breakaway switch plus unnecessary energy draw.



SAFETY BREAK-AWAY SWITCH WILL NOT OPERATE
unless connected to a power source equivalent to or greater than an auto-motive type 12 volt, 12 amp hour wet-cell battery.

Fire Extinguisher

A fire extinguisher is installed in each vehicle and is located near the entrance door in the recreational vehicle. Be familiar with its location and operating instructions as printed on the extinguisher. Inspect your fire extinguisher at least two times per year or more often, as instructed on the extinguisher.

SETTING UP AND USING YOUR RECREATIONAL VEHICLE

We recommend that you select a level or nearly level place for camping. There are two reasons to be level. First, all components in your coach, such as your water drainage system and especially your refrigerator, are designed to operate in a level position. Second, it is more comfortable to park on level ground. Should a level site not be available, use short 2 x 6 inch blocks of wood to raise the low side wheels to a level position.

Before unhooking the trailer from the tow vehicle, be sure the jack feet are in place on the jack legs or tongue jack, and block the trailer wheels to keep the trailer from moving.

Before lowering the jack legs or tongue jacks, you may wish to place a wood block or hard support under the foot of the jack, unless you are on a cement slab. This helps to prevent the jack from sinking into the dirt.

Travel Trailer:

1. Release the weight distributing bars (if used).
2. Release the safety latch on the coupler.
3. Raise the coupler on the A-frame by turning the tongue jack until the ball is free.
4. Disconnect the 7-way wire connector, safety chains, and the breakaway cable.
5. Move the tow vehicle away as desired.
6. Lower the tongue jack until the coach is level.
7. Now lower the stabilizer jacks, two or four as equipped.

Fifth Wheel:

1. Extend lower leg extension and foot to solid surface on ground.
2. Lower jack(s) until foot is engaged onto ground or support
3. Release latch on fifth wheel hitch
4. Raise the front end with the crank or 12-volt jack motor.
5. Disconnect the 7-way wire connector cord.
6. Disconnect the breakaway cable.

7. Move tow vehicle away from camper.
8. Level your camper from front to rear.
9. Lower stabilizer jacks in rear of camper as equipped.

The use of stabilizer jacks on a recreational vehicle is a popular and useful option. They provide a reasonable amount of stability while using, occupying, and moving around in your camper. It is important to remember that stabilizer jacks are for support of the coach and are not designed to bear the weight of a recreational vehicle.

To operate the stabilizer jack, place crank onto the jack shaft and turn clockwise to lower until the frame begins to raise slightly. Equalize all four jacks for best support. You may need to adjust each jack two or three times.

To raise jack to upper travel position, insert crank or power switch and turn counterclockwise until jacks are seated in UP travel position.

Upon completing the setup of your coach, you are now ready to make attachments to various facilities:

- Waste water hose connections.
- 110-Volt power cord electrical hookup.
- Turn on propane tanks and light pilot lights, if any, on appliances. Remember there may be air in your propane lines. Be sure to bleed them before planned usage.
- Open any windows and roof vents as desired for ventilation.

You may have additional accessories and options, such as an awning on the door side which need to be opened. Separate instructions are provided by the manufacturer of these components.

⚠ CAUTION

When preparing to depart or move, don't forget to reverse the procedure above. Remember, open roof vents, windows, or TV antennas left in UP position are subject to wind damage in transit.

Propane Detector

Any recreational vehicle which contains a propane fuel system with propane consuming appliances requires a propane leak detection device for safety protection. A converter or auxiliary battery is required to supply 12-volt DC energy to operate the leak detector. There is no master cut-off switch to disengage detector.

When 12-volt power is provided, the green LED light will come on. After 60 seconds, the detector will begin monitoring the environment for combustible vapors, such as propane vapor. Should a leak occur, with propane vapor reaching the detector in sufficient concentration, your detector will produce a pulsating alarm sound and the red alarm indicator will light. The alarm will continue to sound until vapors have dissipated or until the mute button is pressed. The mute button only stops the alarm from sounding for 60 seconds. The alarm will reoccur if vapors are still present.

This detector only indicates the presence of propane vapors at the sensor. Vapors could be present in other areas of the coach. More information on propane is found in ***Chapter 4 - Systems***.

Following are procedures to take during an alarm:

1. Turn off all gas appliances (stove, heaters, furnace). Extinguish all flames and smoking material. Evacuate – leave doors and windows open.
2. Determine and repair the source of the leak. Seek professional help if necessary.
3. Turn off the propane tank valve.

⚠ CAUTION

Do not re-enter until the problem is corrected.

Your propane detector will not operate when voltage is below 8.5 volts. At 10.5 volts a battery is considered low. More information can be found in the operating instructions brochure supplied by the manufacturer.

CO Detector

Carbon Monoxide (CO) detectors are standard equipment for our owner's protection (since January 1, 2005). Carbon monoxide is a colorless, odorless, tasteless, and insidious poisonous gas.

WHAT IS CARBON MONOXIDE?

Carbon Monoxide (CO) is a highly poisonous gas which is released when fuels are burnt. It is invisible, has no smell and is therefore very difficult to detect with the human senses. Under normal conditions, in a room where fuel burning appliances are well maintained and correctly ventilated, the amount of carbon monoxide released into the room by appliances is not dangerous.

These fuels include: wood, coal, charcoal, oil, natural gas, gasoline, kerosene, and propane.

Such gases can build up in the blood interfering with the body's ability to supply oxygen to itself.

This carbon monoxide detection device is designed to detect this gas from any source of combustion. It is NOT designed to detect smoke, fire or any other gases.

Operation:

- **Normal Operation:** Light flashes once every sixty (60) seconds. May be red or green.
- **Alarm:** Flashing red light and horn sounds. **EVACUATE IMMEDIATELY!**
- **Service Required:** Red light flashes and alarm sounds 4 times every 5 seconds.
- **Low Battery:** One (1) short beep, once every sixty (60) seconds.
- **Testing:** Test this unit weekly by pressing the "Test/Reset" button.

⚠ WARNING

Activation of your CO alarm's audible horn indicates the presence of carbon monoxide (CO) which can KILL YOU.

WARNING. This product is intended for use in ordinary indoor locations of family living units. It is not designed to measure compliance with Occupational Safety and Health Administration (OSHA) Commercial or Industrial Standards.

Individuals who are at special risk from carbon monoxide exposure by reason of age, pregnancy or medical condition may consider using warning devices which provide audible and visual signals for carbon monoxide concentration under 30 ppm. If in doubt consult your medical practitioner.

Smoke Alarm

Smoke alarms are placed on the ceiling between the sleeping area and cooking area of each RV built.

Operation and Testing:

- **Operation:** The smoke alarm is operating once the battery is correctly connected. The LED will flash every minute to show the battery is supplying power to the alarm. When production of combustion is sensed, the unit sounds a loud alarm which continues until the air is cleared.

- **False Alarm "Mute" control:** Models (S/SLL) with the mute feature have the capability of temporarily reducing the sensitivity of the alarm circuit for approximately 10 minutes. This feature is to be used only when a known alarm condition such as smoke from cooking activates the smoke alarm. The smoke alarm horn is muted by pushing and holding the test button on the alarm cover for 5 seconds. The smoke alarm will automatically reduce sensitivity and the LED will "flash" every 10-20 seconds for approximately 10 minutes to indicate the alarm is in temporary mute condition. The smoke alarm is completely operational during the mute cycle and will alarm if the smoke density increases. After the 10 minutes mute cycle the alarm will "beep" twice letting you know it has automatically returned to normal sensitivity.

⚠ CAUTION

Before using the "mute" feature, identify the source of smoke and be certain that safe conditions exist.

- **Testing:** Test the alarm by pushing the test button on the smoke alarm cover for at least three seconds, until the alarm sounds. The alarm sounds if all electronic circuitry, horn and battery are working. If no alarm sounds, the unit has a defective battery or other failure and should be replaced immediately.

General Detector Information

As you are confined in a RV which is much smaller than a standard house, you must realize safety detectors will be activated much sooner than in a residential house, due to there being much less air volume.

TEST SAFETY ALARM OPERATION AFTER VEHICLE HAS BEEN IN STORAGE, BEFORE EACH TRIP, AND AT LEAST ONCE PER WEEK DURING USE.

Each of the 3 listed detectors has it's own manual and instructions sheet, providing more information for it's use and maintenance.

More information is available in the owners material supplied by the manufacturer of the detector. Life time of the detector ranges from five to seven years and will need to be replaced as per manufacturers instructions.

⚠ WARNING

Test smoke alarm operation after vehicle has been in storage, before each trip, and at least once per week during use. Failure to comply may result in serious injury.

Steps (Two or Three)

Before entering your recreational vehicle place your hand in the center of the step assembly. Pull the step outwards. The step assembly will raise slightly and then out, away from the coach. The lower step will unfold 180° to usable position. The arm on the step will meet a positive stop.

Step care, maintenance and lubrication information will be found in Chapter Seven - Mechanical Maintenance.

⚠ CAUTION

After lubrication, be sure no lubricant is remaining on step, causing a person to slip.

Windows

For operation all windows have crank operation except egress windows. Egress windows have an unlocking handle or two small hinged clips on each side. After unlatching, the panel will swing out on a top hinge. On some egress windows screens are attached to swing out panel of window.

Doors

Locks on entrance doors have two lock mechanisms, a deadbolt in the frame section of lock and a standard lock in the handle. Both locks use the same key.

Screen doors may have two types of latches. First, a “roller” latch and secondly, a “hook” latch which needs to be tripped to open.

Locks on trunk doors need a small quantity of silicone lubricant sprayed internally two times per year to keep functioning correctly.

JACK® Digital HDTV Over-the-Air Antenna

w/built-in SureLock™ Digital TV Signal Meter

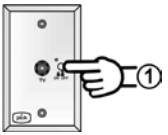
OA8250-White
OA8251-Black — **Roof thickness: 2 7/8" to 8"**

OA8450-White
OA8451-Black — **Roof thickness: 1 1/4" to 3 1/2"**

SPECIFICATIONS

Dimensions:	11.25"H x 16"W x 12.5"L	Powered Amplifier	+12 volt / 100 mA working
Weight:	2.3 lbs.	Power supply:	Wall Mt. Switch (ordered separately) • Mfr. # 21015 - power supply, white • Mfr. # 21017 - power supply, black
Frequency Bands:	VHF (47-230 Mhz) - 20 db gain UHF (470-860 Mhz) - 25 db gain		
Signal meter Frequency Response:	40-862 Mhz (Ch 2-69)	Enclosure/Mount:	ASA-Automotive grade

OPERATION



1. Turn on antenna power at wall mount plate.
2. Turn on SureLock™ Signal Meter power button on side of rotational knob enclosure.
3. Rotate attenuator dial fully clockwise.

Note: In step 4, LED lights will illuminate from left (next to power) to right. All LED lights may not illuminate depending on signal strength.

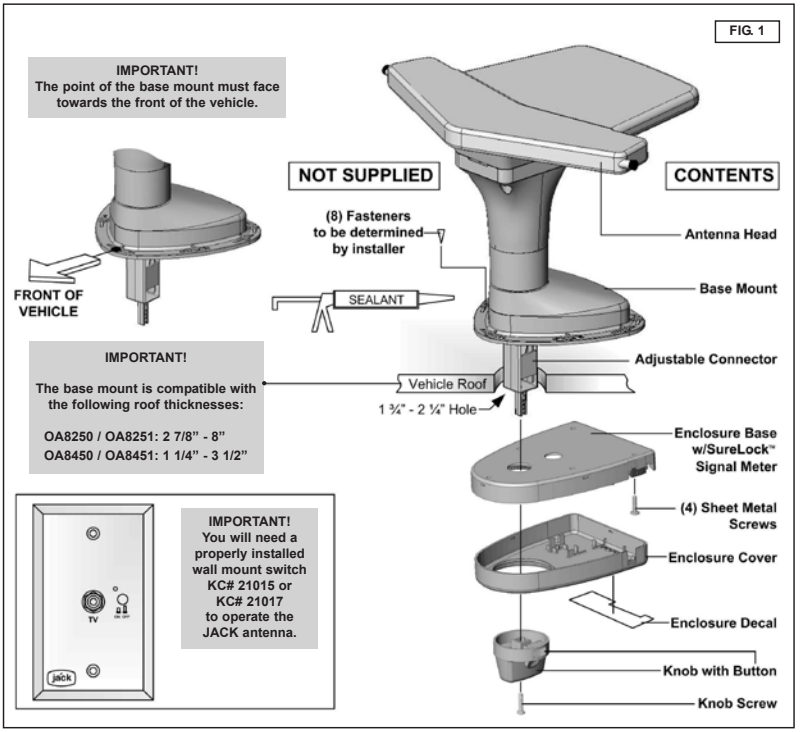
Note: Arrow on knob indicates which direction antenna is pointing.

4. Depress button on rotational knob and rotate antenna until maximum number of LED lights illuminate on signal meter.
5. Rotate attenuator dial counter clockwise until last illuminated LED light flickers.
6. Rotate antenna to illuminate last flickering LED light.
7. Repeat steps 5 and 6 to pinpoint signal reception.
8. Follow instructions for TV or converter box to scan for available channels.

OVERVIEW (FIG. 1)

Note: Please read thru the instructions completely before beginning.

1. Unpack and verify all parts are present.
2. Make sure you are using the correct unit:
   OA8250 and OA8251: Roof thicknesses from 2 7/8" to 8"
   OA8450 and OA8451: Roof thicknesses from 1 1/4" to 3 1/2"



EXTERIOR BASE MOUNT INSTALLATION (FIG. 2)

IMPORTANT! The installer is responsible for determining the most appropriate fastener to secure the base mount to the roof and weatherproofing all holes with sealant. The installer is responsible for sealing all existing holes when replacing an existing antenna mount.

1. Select an area on the roof for the base mount keeping in mind the following **IMPORTANT POINTS**:

   a) **The point of the base mount with the adjustable connector should face the front of the vehicle (Fig. 1).**

   b) **The center of the roof hole must be at least 20" away from any object taller than 8" to provide clearance for the antenna head to rotate freely. The center of the roof hole must also be at least 8" from the edge of the roof.**

   c) **There must be room on the interior ceiling of the vehicle to attach the rotation knob and enclosure to the adjustable connector. The interior enclosure can be mounted in any direction.**

2. Drill a 2" hole **perpendicular to the roof surface** all the way thru the vehicle roof where the adjustable connector will go. (A 1 3/4" hole will work for flat roofs. If roof has a pitch (up to 3 degrees) you may need a larger hole up to 2 1/4".)

3. Inside the vehicle, place the enclosure base over the hole and against the ceiling in the position it will be mounted. Mark the coax hole on the ceiling. Enlarge the **interior roof hole only** at this location to accommodate the coax cable where it will exit the roof and enter the enclosure base (Fig. 3).

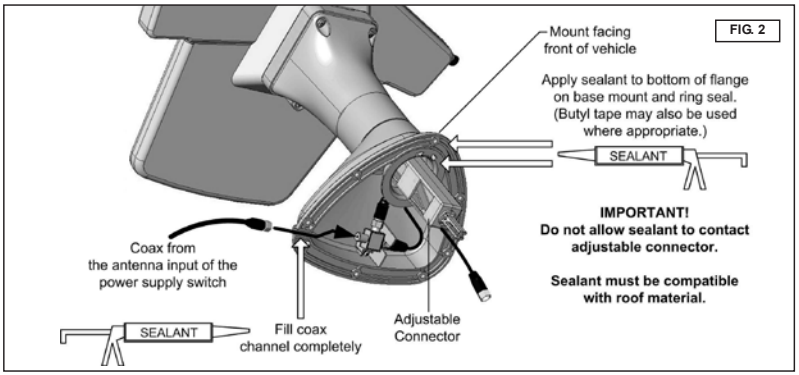
4. On the roof of the vehicle, carefully pull out the adjustable connector so it will extend beyond the thickness of the roof when the base mount is installed. It must extend thru the roof to allow installation of interior components. Exact length will be adjusted when interior components are installed.

5. Connect the coax from the antenna input of the power supply switch to the open connection on the splitter in the base mount.

IMPORTANT! In Step 6, ring seal sealant must not get on the adjustable connector.

6. Apply sealant to ring seal and base mount, and fill the coax channel with sealant. (Butyl tape may be used in combination with sealant.) Carefully place the base mount in position with the adjustable connector and coax going thru the roof hole and into the interior of the vehicle. **Make sure the point of the base mount with the adjustable connector is pointed towards the front of the vehicle.**

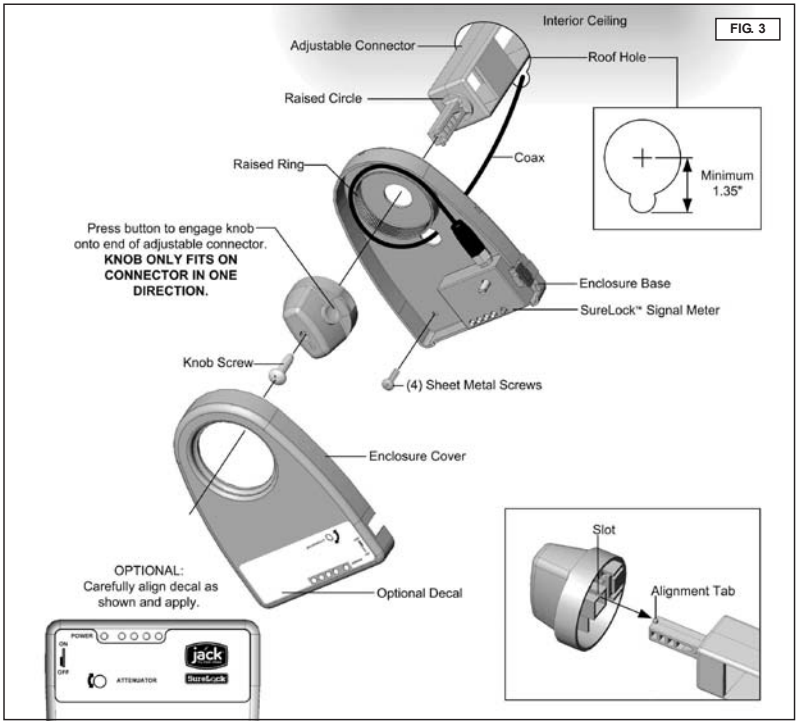
7. Center the adjustable connector in roof hole and fasten the base mount to the roof. Use the mounting holes in the base mount as a guide to install the fasteners (determined by the installer) into the roof. Make sure the base mount is sealed all the way around and the coax channel is fully sealed as well. **ALL EXISTING HOLES MUST BE SEALED!**



INTERIOR ENCLOSURE INSTALLATION (FIG. 3)

IMPORTANT! The rotation knob only fits on the end of the adjustable connector in one direction. SEE INSET BELOW.

1. Press knob button and remove knob from enclosure base.
2. Make sure the coax exits the roof thru the enlarged portion of the roof hole and route the coax thru the coax hole in the enclosure base. Place the enclosure base around the adjustable connector and against ceiling (The enclosure base will seat around the raised circle on the adjustable connector.) Fasten the enclosure to the ceiling with four included screws.
3. Press the knob button and push knob onto the end of the adjustable connector. (**The knob only fits on the end of the adjustable connector in one direction**. The knob will fit into the raised ring on the enclosure.) Fasten knob to connector with screw.
4. Route the coax around the raised ring as shown and connect the coax to the RF connector on the SureLock™ signal meter.
5. Optional: If desired, apply the decal to the enclosure cover.
6. Carefully align the cover and snap into place. Make sure not to damage or bend LED lights or pinch the coax cable.



IMPORTANT! Do not power wash any part of the JACK antenna head or base mount.

LIMITED WARRANTY

Every new **JACK** HDTV Antenna System is thoroughly inspected and tested before leaving the factory, and is covered by the following two year parts and one year labor limited warranty from the date of original purchase:

- Two year parts warranty: The customer is not responsible for the cost of replacement parts if the original part is determined to be defective under the terms of the warranty. The customer is responsible for the cost of replacement parts after two years.

- One year labor warranty: The customer is not responsible for labor costs to repair unit if unit falls under the terms of the warranty. Any warranty labor outside of that performed at the factory is not covered unless the product has been installed by an authorized dealer/installer or OEM manufacturer. The customer is responsible for all labor costs after one year.

Should any trouble develop during the warranty period, contact King Controls. You must contact King Controls before the warranty period expires. The customer must supply proof of purchase (such as a dated sales receipt) when requesting warranty service. If customer cannot supply proof of purchase, warranty period shall start 30 days after date of manufacture.

Only King Controls and certified dealers are authorized to perform warranty evaluations and repairs. Depending upon the problem, King Controls may authorize the dealer to perform the necessary repairs, or may have the unit returned to King Controls for repairs.

A certified dealer must not perform any repair without first contacting King Controls for a Service Order Number. King Controls will advise the dealer on how to proceed with any repairs.

If it is determined that the unit needs to be returned to King Controls, customer must return COMPLETE product, freight prepaid, to: **King Controls, 11200 Hampshire Avenue South, Bloomington, MN 55438-2453**.
If inspection shows the trouble is caused by defective workmanship or material, King Controls will repair (or at its option, replace) without charge.

When returning product, King Controls will supply an RMA number (Return Merchandise Authorization). This number must be clearly written on the box. Failure to clearly write RMA number on box may result in delays in processing claim. Along with product, customer should include in the box: his/her name, address, daytime phone number, proof of purchase and description of the problem.

This warranty does not cover installation and external wiring, or remanufactured units. This warranty is not transferable from the original owner.

This warranty also does not apply where:

- The product has been abused, misused, improperly installed or improperly maintained.
- Repairs have been made or attempted by others that are not certified by King Controls to do such repairs.
- Repairs are required because of normal wear and tear.
- Alterations have been made to the product.
- The product enclosure has been opened without authorization.
- Damage has been caused by power washing.
- Circumstances beyond the control of King Controls cause the product to no longer operate correctly.
- Customer is not the original owner.

In no event shall King Controls be liable for any indirect, incidental, or consequential damages from the sale or use of the product. This disclaimer applies both during and after the term of the warranty.

King Controls disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose," after the one year term of this warranty.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

King Controls
11200 Hampshire Avenue South, Bloomington, MN 55438-2453
Phone: (952) 922-6889 Fax: (952) 922-8424
www.kingcontrols.com

21059 REV C

⚠ CAUTION

When lowering the antenna, never lower it into any position except the TRAVEL POSITION. Failure to lower antenna into the TRAVEL POSITION before traveling will very possibly cause damage, not covered by warranty (if applicable).

⚠ CAUTION

The power supply should be turned OFF when connecting/ disconnecting cables to power supply and antenna, but should be turned ON when testing for voltage.

To Test System:

1. Make sure the television is working properly.
2. Switch the power supply ON and OFF to see if there is a difference in the picture quality while watching TV. If NO difference, test for 12-volt power at the cable on the roof top.

SLIDE-OUTS

OPEN RANGE RV COMPANY products feature NORCO Cable Power slide out systems.

NORCO Slide-Out System

Before operating the power slide-out system in your coach, read and become familiar with these instructions, along with components and operation methods. Most of their components are located behind the inner slide roof fascias of the unit or under the slide floor.

Electrical Components

All power slide systems operate on 12 volt DC power provided by a fully charged auxiliary battery optional on some models and converter (Through a 12-volt distribution load center breakers are provided for each slide). For best performance, have 120-volt AC power attached to your coach, feeding the distribution load center. Please operate one Slide Motor at-a-time.

⚠ CAUTION

Because operating the slide-out draws up to 15 amp current from the battery, some source of supplemental charging should be operating while extending or retracting the slide-out.

You will find the bedroom slide out to be located above the slide on inside wall of recreational vehicle.

On the motor is a “brake,” requiring 12 volt DC power to be activated. The brake is designed to lock the motor, preventing any movement of the slide out mechanism during travel.

A 20 amp breaker is located in the distribution box, feeding the master switch and then the operation switch to motor.

Supplement Your Battery by Either One of Two Choices:

1. Hook up a 120-volt AC power cord to recreational vehicle for converter operation.
2. Use 12-volt power through the tow vehicle to the recreational vehicle battery(ies).

Either of these methods will help ensure maximum electrical power for the slide-out motor, as well as maintain your battery.

Operation Switch. This switch is a two position spring loaded switch. Select which direction you wish to move the room. Press on desired position and hold until room is seated, and gasket is slightly compressed. Do not force the room to move beyond sealing as damage could occur.

Trailer Set-Up Requirements – General

Note:

1. **Before operating the slide-out room, level the trailer front-to-rear and side-to-side.**
2. Extend all stabilizer jacks to make solid contact with the ground and/or on solid blocks. Placing stabilizer jacks onto a hard surface allows the coach to remain square and assure a good weather tight seal between the room and trailer sidewall.

Standard Floor Slide-Out Operation:

1. To extend the slide-out, press and hold the switch mounted on the Master Control Panel.
2. To retract the slide-out room, be sure the trailer battery is fully charged. Move or rearrange the furniture and interior fixtures as

necessary to provide clearance to fully retract the room into the trailer interior.

3. Press and hold the wall mounted switch to fully retract the room. Release when the room is fully retracted.

There is no positive stop for the standard slide systems. When the slide-out begins to seat against the wall stop and just bump the switch until the slide-out is tight as desired. Use caution when moving slide. Facia boards can be torn loose when you don't release operation switch.

Due to power requirements, operate only one slide-out at a time.

⚠ WARNING

- **Always make sure that the trailer is level before operating the slide-out room.**
- **Always make sure there are no obstructions blocking the path of the room when it is moving.**
- **Always make sure that the room path is clear of people and objects before operating.**
- **Always keep away from the slide rails under the coach when the room is in motion.**

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

BEDROOM SLIDE OUT

Hold operation switch until room seals tightly on the exterior of the unit. DO NOT distort or bend the exterior flanges or interior fascia by holding the switch in "on" position.

To retract, reverse the procedure and hold button until the room is fully inside with gaskets sealing to the outer wall. It takes about twenty seconds to move the slide in or out.

⚠ CAUTION

When opening slide room, DO NOT over-extend. Fascia board can be distorted, loosened or bent from correct position.

⚠ WARNING

Stand clear of the room's interior path and verify that the room's exterior path is clear before extending or retracting the room.

Manual Override

Should a power failure occur (no 120 volt AC power or the battery looses its charge), follow the directions listed below:

Motor and Gear Box Above Slide Room:

Flexible socket 10" long goes on end of motor mounted above the slide out fascia in the center of slide room.

Bedroom Slides:

Bedroom slides are same as frame motor located above slide out fascia.

OPEN RANGE RV COMPANY does NOT require or suggest blocking, supports, jacks, etc., to be used under slide outs during extended normal use.

The operation switch is a two position spring loaded switch. Select which direction you wish to move the room. Press on desired position and hold until room is seated, and gasket is compressed slightly. Do not force the room to move beyond sealing as damage could occur.

NORCO INFORMATION

System operates on 12 volt D.C. power, with 7.5 amp breaker in module (green) and 15 amp breakers.

CHAPTER 4
SYSTEMS

WATER AND DRAINAGE PLUMBING

Your OPEN RANGE RV COMPANY recreational vehicle has a complete water system, to carry fresh water, as well as holding tanks for used water. Each group has its own explanation along with its own operation.

Tanks

Water containers are installed under the coach between frame members and protected with a cover.

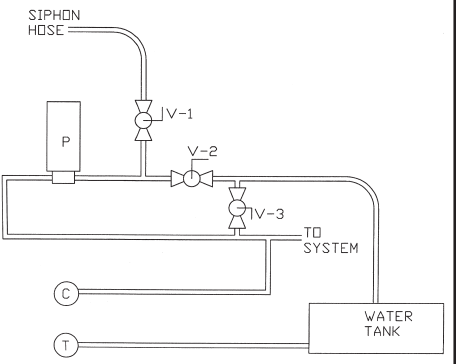
Filling Fresh Water System

To place water in to your coach fresh water system use one of these methods:

Figure 1

1. City Water Fill (Figure 1): Water may be received into the system through a direct hook-up referred to as a “city water fill.” After attaching a hose to hook-up and supply line, open the faucet from the supply line. Enter the coach and open any faucet to relieve air from the lines. The water heater will fill first before the supply lines. You will experience some air pockets. Allow them to escape before closing faucets.
2. There is no standard gravity water fill for storage tank. Near the city water fill there is a fresh water tank fill connection hose. Follow instructions below:

T – Pressurized Fresh Tank Fill
P – 12 Volt Water Pump
C – City Water Fill
V1 – Regulates siphon hose. Should be closed except to draw in water, sanitizing solution or antifreese
V2 – Closes line from tank to pump. Close to sanitize and winterize. Open for normal operation.
V3 – Used to sanitize water tank. Open to sanitize or fill water tank from siphon hose. Close for normal operation and winterizing.



⚠ CAUTION

DO NOT leave tank unattended while filling.

⚠ WARNING

Potable water only. Sanitize, flush and drain before using. See instruction manual.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

⚠ CAUTION

Excessive pressure from water supply systems may be encountered in some parks, especially in mountain regions. Water pressure regulators are available to protect your system against such high pressure. A regulator at 45 pound rating is recommended to prevent damage to the plumbing system or components.

12-Volt Demand Pump

When water is desired and you are not hooked up to city water, your tank will be your supply. On your monitor panel is a switch to turn on the 12-volt demand pump. Energy for the pump is supplied by the auxiliary battery or converter. The pump will self-prime when started, supply water, and continue to run until approximately 40 pounds of pressure is achieved. When pressure drops to 20 pounds, pump will restart. Some cycling in pump may occur. A check valve is built within the pump to prevent water from flowing into the supply tank.

When pump is not in use, turn 12-volt power off at the switch.

Faucets

The basic operation of a faucet is the same as in your home. Open the knobs or raise the single lever. Close faucets when sufficient water volume is achieved. It is normal to experience occasional air pockets in the system.

Bath and Shower

Your bathtub and shower are built with ABS material, similar to those in your home. Shower doors are provided with the coach and must be used to prevent water from spilling onto the floor, possibly causing damage.

The shower head used in the bathroom has a non-positive shutoff valve and will drip slightly in shut-off position. A vacuum breaker is also built into the faucet to permit water in hose to drain out as a code requirement.

Before beginning your shower be sure the water heater is lit. Adjust the faucet for temperature before entering the tub or shower. When shower is completed be sure to turn water off at the faucet.

Used water will drain through the plumbing pipes into the gray water holding tank. Remember capacities of your water heater and gray water holding tank. Long showers in a recreational vehicle are NOT suggested due to the amount of water that is available. To conserve water, wet down, and turn water off while you soap up, then rinse.

Outside Shower

A convenient faucet assembly with hot and cold water is available for exterior use washing or rinsing on the outside of camper, such as washing hands and utensils.

To operate the outside shower:

1. Attach quick connect coil hose with sprayer handle.
2. Open the faucet valves and adjust to the desired temperature.

The coil hose should be removed to drain the hose faster.

Sanitizing and Filling the Potable Water System

For your safety, you should sanitize your potable water system when your recreational vehicle is new or when it has been sitting unused for a period of time and it may have become contaminated.

Prepare a chlorine solution using 1/4 cup of bleach (5% sodium hypochlorite solution) to one gallon of water. **Prepare one gallon of this solution for each 15 gallon capacity of the tank.** As designed and constructed, this method will sanitize the plumbing system.

For Direct Fill – City Water or Storage Tank:

1. Close all the drains: tanks, lo-point drains, and have by-pass closed to water heater.
2. With the coach completely drained, open V1 and insert siphon hose into container with sanitation solution. Be sure V2 is also open and V3 is closed. Start the pump to draw liquid into the system until liquid comes through the faucets. Close faucets and pump will shut off. Lines are now full.
3. Should you desire to sanitize the tank, open V3, valve with red handle to “in line” position allowing liquid mixture in tank.
4. Now close V1 and V2. With V3 open, add additional water to tank through the city water fill. Open faucets for free flow of water through system.
5. Allow this water solution to stand in the system for three hours.
6. Drain solution and flush with fresh water.
7. To remove any excess chlorine taste or odor, prepare a solution of one quart vinegar to five gallons of water and allow this solution to agitate in the tank for several days by vehicle motion.
8. Drain the tank again and flush with fresh water.
9. Your demand water system is now ready for use.
10. Be sure to TURN OFF the pump when traveling or when the recreational vehicle is not in use.

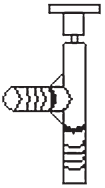
Your water system is now ready to be used.

Drainage – Fresh Water

All permanent fresh water tanks can be drained. Three types of drains could be used, (1) a push/pull (shown), (2) a turn valve with open/close position, and (3) a cap attached to a plastic fitting below the trailer. An open end wrench, one inch nut size, is required to loosen the cap.

To drain the supply lines and the entire system, you need to follow the steps listed below. Locate the valves. These valves will be at the “lowest” point of the water lines, wherever the water lines protrude through the bottom board.

To Drain System:



1. Open all faucets including optional exterior shower.
2. Open the fresh water tank drain.
3. Open the water heater drain.
4. Open all (two to four) low-point drains.
5. Open the toilet valve, hold or block if need be.
6. To empty the pump, start and allow to run up to 20 seconds.

Sanitation System

Toilets

The toilet used on Open Range's recreational vehicles features a foot pedal for flushing. The second type is referred to as the *Aqua Magic V.* **The toilet is available with two levers for flush operation or with foot flush operation.**

Prior to using your toilet, be sure to add proper amount of deodorant chemical into toilet with water. Flush contents into tank plus 2 or 3 gallons of water.

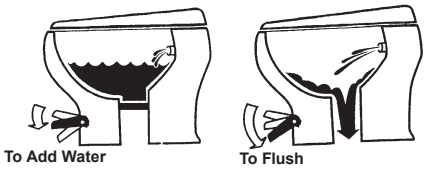
After each flush, about 2" of water will be in the bowl, which is fine for travel. For best operating function, keep 3-5" of water in bowl. This assists flushing procedure. Always flush for 10 seconds or more to ensure all solids and wastes move into tank and are not held in drainage pipes.

OPERATION: Note the photos below showing movement of pedal downward to 9 o'clock position, you will add water to bowl. Push downward further to 8 o'clock position to flush toilet's contents to drain into waste tank. Release pedal slowly to close flush operation.

Unlike your toilet in your house which uses 4 to 7 gallons of water per flush, a recreational vehicle uses 2 to 3 quarts to save water and space. When insufficient water is used during flushing, waste materials may not evacuate properly from drain lines to tank, causing "clogging" in pipe.

When hooked up to sewer drain at a campground, ALWAYS keep termination valve CLOSED until tank is at least 3/4 full. This will provide sufficient water to assist in complete draining of tank.

Manufacturer of toilet, Thetford Corp., offers a complete line of deodorants, chemicals, and other convenience products for your use. Your dealer can assist you with these needs and may already have them in stock.



Using Toilet and Tank System

When camping you should always have 4 to 6 inches of water in the toilet bowl. The toilet system performs better when you run water 10 to 20 seconds after flushing to ensure wastes will proceed to the bottom of the tank. Unlike your toilet at home which uses four to seven gallons per flush, the average recreational vehicle system uses two to three quarts. If there is not sufficient water used during flushing, waste materials may not evacuate properly from drain line to tank. Tank and pipes could eventually become clogged.

⚠ CAUTION

NEVER leave the gate valve of your coach's sewage tank open when hooked up to a park's sewer system. Open only when you wish to drain system.

Vents

A very important part of your sanitation system is the vent system in your coach. These vents release air from holding tanks allowing water to enter. Vent pipes are attached to the holding tank, fed through the walls and cabinets to the roof. On some models a portion of vent pipe may be part of the drainage system referred to as a "wet vent". As air flows upward, water will be draining downward in the same pipe.

Holding Tanks

The final parts of your sanitation system are the holding tanks for waste materials and water. These are located below the floor of your coach.

Gray Tank. Waste water from the bath tub, shower and sinks will drain into this container. No special preparation is required, however, you may wish to add baking soda or a Thetford chemical to reduce odors from food particles in the system.

One of your coach's liquid waste holding tanks at kitchen may be vented with a "side venting" appliance.

⚠ CAUTION

Keep drain valve closed. Sewer gases may be present when RV is connected to campground sewage hookup. If drain valve is open, sewer gases may be vented out the side of the RV.

Waste Tank. The toilet drains into the waste or "black" holding tank. For correct preparation follow the listed steps:

1. Release two quarts of water into the toilet bowl.
2. Place the recommended quantity of chemicals for waste holding tank as per instructions on the bottle into the toilet bowl.
3. Flush liquids into the tank and allow up to two gallons of water to flow into the tank.

Each time you drain the tank, you should follow the above instructions before using.

All drain pipes will have a "P-trap" installed into each line. Water in these traps prevent odors from escaping into the coach. During travel, water from the P-traps may spill and permit odors into the coach. These odors come from fats and food particles decomposing in the tank. By adding water and using an RV approved deodorizing agent, contents will dissolve faster, keeping the drain lines and tanks clean and free flowing. These chemicals are available at an RV supply store.

⚠ CAUTION

It is important to use adequate water to flush and have several gallons of water with chemicals in the tank. This helps the flow of wastes and reduces solid waste build-up.

Draining the Tanks

A final part of your sanitation system is the drainage of holding tanks. Realizing dump stations will vary, place the coach as level as possible to make drainage easier. Some tanks drain from the center requiring level or slightly up in front. Others will drain from end permitting a slight tilting to the side which drains are on.

Remove the cap and attach the adapter onto the valve housing. Turn the adapter 10º to lock onto the pegs. Attach a flexible sewer hose to the adapter and secure with a clamp. Place the other end into the approved sewer system.

You may now open the 3 inch drain valve to drain the sewage tank first. Open the valve on the gray water tank last to utilize water to wash and rinse the hose and drain lines.

Most states and parks have strict laws and regulations to prohibit dumping of wastes of any kind into anything other than proper disposal facilities or sewer systems. Almost all privately owned parks have either a central pump facility or offer a campsite hookup for sewage. You can find lists of many dump facilities throughout the United States in *Woodall's, Rand McNally Camp Guide, Good Sam Camp Guide, KOA Kampgrounds Camp Guide*, or various other publications. Some fuel stations also have dump stations.

Maintenance for Holding Tanks

The following maintenance is recommended by our holding tank suppliers to keep your tanks clean and keep the probes free of debris and build-up.

Gray (Waste-Water) Tank. Fill tank with 10-12 gallons of warm water. Add a degreaser such as a citrus cleaner or Dawn dish soap. Leave solution in tank while you are traveling. Rinse and drain tank.

Black (Sewer) Tank. Fill tank with 10-12 gallons of water. Add one bottle of drain cleaner, such as Drano or Liquid Plumber. Leave the solution in tank while traveling. Rinse and drain tank.

Optional heated holding tanks are available on many models. Two (2) methods used to distribute heat are: (1) Placing holes from tank compartment into heat duct built into floor, allowing warm airflow throughout tank area, (2) Heating pads attached to tank with adhesive, operated with 12V power from battery and/or converter. Switch to turn on pads is normally located in bathroom area.

Winterizing Your Recreational Vehicle

Preparing your trailer for cold weather is very important for most states and Canada. Failure to prepare your coach for cold weather will cause the water systems to freeze resulting in breakage. Damages related to freezing are not covered under the terms of your limited warranty.

Two methods of winterizing your coach after draining and flushing your drainage system are listed on the next page.

Method 1:

1. Open all faucets, low point drains and toilet valve to drain all water. Leave these open during this procedure.
2. Start pump and operate until all water has been removed, takes about 10 to 15 seconds.
3. After water has been drained, use an air hose from compressor and an adapter attached to city water fill. In about 3 to 5 minutes all water will be blown out of system.
4. Pour one (1) cup (12 oz) of non-toxic RV anti-freeze into each P-Trap, two in sinks and one in bathtub.

⚠ WARNING

DO NOT use Ethylene Glycol (automotive antifreeze) or Methanol (windshield washer antifreeze) in your fresh water system because they are harmful and may be fatal if swallowed!

Method 2:

WATER HEATER BYPASS KIT: The water heater bypass is available on most units.

To winterize the plumbing system:

1. Turn off the pump.
2. Drain the water heater and the entire water system.
3. The open end of the hose is to insert into a gallon jar of anti-freeze liquid.
4. Position valves as shown.
5. Turn on the pump to supply RV system. You may use four to six gallons or more.

Now you can send anti-freeze liquid through coach plumbing system without filling water heater.

Using the Water System During Freezing Weather. Your towable RV was not intended to be used during freezing weather unless special precautions are taken. Water freezes at 32° Fahrenheit in campgrounds or at home.

There is no product that can be added to the water to ensure freeze protection when the system is in use, other than RV anti-freeze. DO NOT drink water which contains anti-freeze.

Flush System

The flush system is designed and built to rinse waste from holding tank AFTER waste tank has been drained completely of water and solids.

Attach a fresh water base connection marked “San-a-flush.” Be sure termination valves are open on holding tank(s).

Open valve to release water into tank for rinsing and cleaning of your waste holding tank.

Rinse for several minutes to remove any foreign matter from tank.

Remember the moisture content may give you a false reading on your monitor panel indicating it is full. Allow time to dry out tank or recharge for next usage.

Lo-Point Drains

Water storage tanks and water heaters have their own drains, as previously mentioned. For line plumbing system these drains are placed at the lowest area of water line to release liquids. By locating 2 short water lines below coaches, usually inches apart, and capped off.

Some models may have the outside shower assembly placed below floor level and used as the “lo-point” drain.

PROPANE FUEL SYSTEM

The fuel system in your recreational vehicle has numerous components such as, piping, copper tubing, brass connectors, hoses, regulators and appliances. Each of these components will be explained in its appropriate area.

Propane is the only fuel permitted to be used in a recreational vehicle and its appliances. This product is refined from crude oil through natural gasses. An agent has been added for detection should a leak occur or a valve accidentally be left open. It is important for a recreational vehicle owner to recognize and identify the smell of propane vapor.

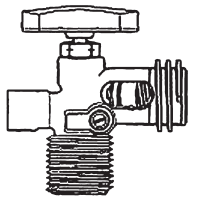
Butane cannot be used since its boiling point is 30°F. This fuel will not flow in freezing temperatures.

Natural gas and methane CANNOT be used in any OPEN RANGE RV or it's appliances.

Propane fuel is stored in liquid form under high pressure in special containers. Boiling point is 44°F, the temperature when vapor ceases to flow. Fuel will change to vapor when released from the container. Appliances are not designed to operate with liquid. Liquid will damage o-rings in valves and also leave sticky, oily residue causing poor or no operation in the regulator.

Propane Container

The propane cylinder is D.O.T. approved container to hold liquid under high pressure, normally a 20 or 30 pound capacity.



The open/closing valve, referred to as an acme cylinder valve, is to be closed at all times unless hooked up to a propane system or when filling the container.

At any point a container is disconnected, BE SURE to install the "dust cap" over the acme valve. This cover is required by the RV Industry Gas Association, the container manufacturer, and is for your safety.

Whenever the container is detached from the propane system, DO NOT allow the cylinder to move or roll around during transporting to and from the gas supplier.

A second smaller valve is built into the main valve to prevent fuel from escaping. A hose with an acme fitting or a POL fitting must be completely and tightly installed before gas vapor can be withdrawn.

This valve, also referred to as an OPD valve (overfill protection device) has a float device inside of the cylinder to prevent overfilling of the container.

Servicing and Filling Propane Containers

Filling a propane container must be done carefully and correctly. Only a qualified person, properly trained on inspection, filling and safety procedures, should fill containers.

A new container must be “purged” before placing into service and must NEVER BE OVERFILLED. Purging is an operation performed by your dealer or propane agency to remove any atmospheric air. As an owner you need not be concerned regarding this procedure unless you permit the valve to be in OPEN position when empty.

⚠ CAUTION

DO NOT use tools to open or close the tank valve. HAND TIGHTEN ONLY to avoid damage to the valve or handle.

Two overfill devices are built into the valve to prevent overfilling of the container. First, is the small brass “knob” or “screw” inside of the valve. This “10% valve” must be open when filling, allowing air to escape. When the container reaches 80% of the correct capacity, liquid appears. Shut the supply filling valve off. Close the 10% valve plus the top handle of the main valve.

Secondly, containers with OPD valves have a float on the inside that automatically shuts off liquid flow when the 80% capacity has been reached.

When refilling propane containers, they are generally removed from propane compartment or tie downs. BE SURE to reinstall correctly, as shown in installation instructions, and test for leaks.

⚠ WARNING

Never smoke during the filling of propane tanks. Keep the recreational vehicle away from immediate filling area when possible or extinguish all gas pilots.

⚠ WARNING

A warning label has been located near the propane container. This label reads as follows:

DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.

1. **Overfilling the propane container can result in uncontrolled gas flow, which can cause fire or explosion.**
2. **A properly filled container will contain approximately 80 percent of its volume as propane.**

⚠ WARNING

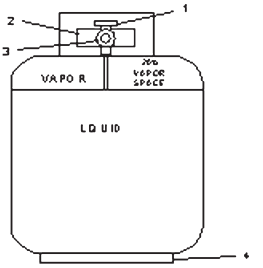
Propane cylinders shall not be placed or stored inside the vehicle. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging gas to the atmosphere.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

When propane containers are filled to 80% level there is available space for safe expansion of the vaporized liquid. Should your container become slightly overfilled, pressure may rise due to hot sun. It could cause the overflow valve to “blow-off” and emit a small quantity of propane vapor. This can be detected by a strong odor around tanks. Keep open flames away from this area. It is best to remove the bottle, take it to a safe area, and “bleed-off” the excess pressure by opening the valve slightly and closing it when discharge has been sufficient, one to two minutes.

When disconnecting propane containers, you must turn the acme fitting in a clockwise direction because left-hand threads are utilized. When reconnecting, turn connections counterclockwise. Connections must be tight, however DO NOT over-tighten.

1. Knob to open and close main valve.
2. Complete valve assembly.
3. “10% valve” (small brass knob or slot screw).
4. Container mounting stand.



⚠ WARNING

Your vehicle has exterior combustion air inlets. Appliance pilot lights should be turned off during gasoline or propane refueling. (Required by law in some states.)

A warning label has been located near the propane container. This label reads as follows:

⚠ CAUTION

THIS GAS PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM.

Securely cap inlet when not connected for use. After turning on gas, except after normal cylinder replacement, test gas piping and connections to appliances for leakage with soapy water or bubble solution. Do not use products that contain ammonia or chlorine.

ALL GAS LINES HAVE BEEN CHECKED WITH AIR PRESSURE. DEALERS ARE REQUIRED TO RECHECK BEFORE DELIVERY TO RETAIL CUSTOMERS.

Installing Propane Containers

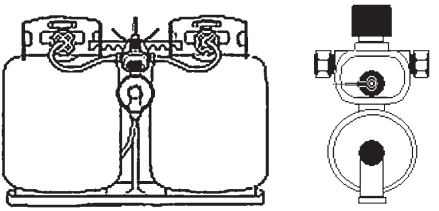
Open Range RV's recreational vehicles are equipped with 20 or 30 pound propane containers.

Mounting and Attaching Instructions are Listed Below:

1. Thread the long rod into the base plate.
2. Set both bottles into place as shown.
3. Drop the double hook bracket over the rod and hook onto the bottle.
4. Attach the wing-nut to hold the bracket and tighten to hold the bottle to the plate.
5. Attach the regulator with the vent down to the bracket.
6. Attach the main hose from the regulator to the manifold fitting in the frame.
7. Attach two short pigtail hoses to the regulator and bottles at the ACME fitting.
8. Test all propane connections for leakage.

To Remove the Propane Containers for Refilling:

1. Remove the bottle covers (if used).
2. Close the main valve on the container.
3. Remove the two hoses at the ACME connection.
4. Install the rubber cap over the valve – ACME connection.
5. Remove /loosen the wing nut holding the clamp hook.
6. Remove the clamp hook.
7. Fill the bottle and reverse the procedure to install. Test all connections for leakage.



Regulator

Propane regulators must always be installed with the regulator vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage that could result in excessive gas pressure causing fire or explosion.

The regulator has the only moving components in the propane system. It's sole function is to reduce the high and varied pressure from the propane containers to safe and consistent low operating pressure. The small inlet is the first stage, which reduces the container pressure to 10-13 pounds.

The second stage then reduces the 10-13 pound pressure to an operating pressure of 11 inches w.c. (water column) or 6.35 ounces of outlet pressure to your appliances. The second stage is adjustable and may need to be adjusted for precise operation. We suggest this to be normal maintenance and performed once per year. Do not make this adjustment without a manometer. This instrument is required to read actual pressure.

If pressure is too high, it affects performance and safety. Should pressure be too low, appliances will not operate correctly. An authorized and competent technician with proper equipment should perform such tests and adjustments, as may be required.

The "automatic" regulator is a two stage regulator used on larger coaches (optional on smaller coaches). With both cylinders full of propane, turn the lever on the regulator towards the cylinder you wish to use first. This will now be the "supply" cylinder and the other "reserve". Slowly open both cylinder valves.

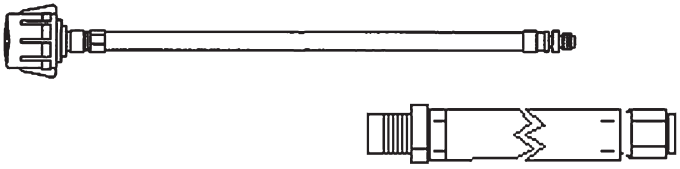
The indicator on top of the regulator will turn bright green. When the cylinder becomes empty the indicator will change to bright orange. Now turn the lever to the side of the full bottle and the green signal will return. You may now remove the empty bottle to have it refilled without interrupting the flow from the full bottle. After filling the cylinder, connect the pigtail hose and slowly open the bottle valve. Do not forget to check for leakage each time you refill cylinder or disconnect any part on the propane system.

High Pressure Hoses with Acme Connectors

Propane leaves the container through a hose with an acme connector attached to the bottle, also having a "flow-limiting device". Should the container valve be opened too quickly this device may close, stopping the flow of propane. This device is designed to equalize propane pressures in about 5 seconds, generally being unnoticed. All pilot light valves must be turned off for equalization of pressure to occur.

Main Supply Hose – Low Pressure

The main supply hose will be attached from the regulator to the brass manifold fitting in the frame of the coach. The swivel brass nut on the main hose will be your final attachment.



3/8" MPT x 1/2" Female Flare Swivel

There are several things to remember each time the container is removed:

1. Be sure ALL fittings are tight. Always use two wrenches for brass connections.
2. Be sure ALL connections are tested for leakage.
3. Open the main valve slowly to avoid a fast rush of gas to flow-limiting device causing gas "freeze".
4. Listen carefully – a "hissing" sound longer than one second may indicate a gas leak. Close valve and search for leak.

Should you experience a gas "freeze-up", close the main valve and wait 15 minutes before trying again. Keep the container valve(s) closed when traveling. Some states prohibit traveling with the propane container valves open, especially in underground tunnels on expressways.

Operation

After the camper is completely set up and you are prepared for camping enjoyment, follow these steps for propane operation.

1. Be sure ALL burner valves, controls, and pilot light valves are closed.
2. Open main valve on propane container slowly to avoid a fast rush through excess flow valve causing "gas freeze".
3. Listen carefully as gas begins to flow. If a "hissing" sound is heard for more than one or two seconds, close valve and search for a potential leak.
4. Light appliances as needed and directed in Chapter Five - Appliances.

⚠ WARNING

Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fire or asphyxiation.

Checking for Leaks

The entire propane distribution system and appliances have gone through complete factory and dealer tests for any leakage. When traveling with your RV normal vibrations and road movement may cause connections to loosen and develop leaks.

For normal maintenance we advise all owners to test for leakage at least once per year or more often. You may request your dealer to perform a maintenance check each spring.

⚠ DANGER

If You Smell Gas:

1. **Extinguish any open flames, pilot lights, and all smoking materials.**
2. **Do not touch electrical switches.**
3. **Shut off the gas supply at the tank valve(s) or gas supply connection.**
4. **Open doors and other ventilating openings.**
5. **Leave area until the odor clears.**
6. **Have the gas system checked and leakage source corrected before using again.**

FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.

Should you encounter an odor, possibly propane, turn off any and all open flames and begin a systematic search for leaks on the complete gas system. NEVER USE A MATCH. Use a soapy water solution which contains NO AMMONIA, or CHLORINE content to check for leaks. If a leak is identified, bubbles will appear. ALWAYS use two wrenches when tightening brass connections to prevent twisting of copper.

For your own protection, the preceding warning label has been placed near the cooking area to remind you of the need of oxygen for combustion and breathing. Due to smaller area in your recreational vehicle, there

is less oxygen than in your home. Proper ventilation is required when cooking.

It is especially important that **cooking appliances not be used for comfort heating**, as the danger of asphyxiation and unsafe levels of carbon monoxide are greater when the appliance is used for long periods of time.

⚠ WARNING

IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING. Cooking appliances need fresh air for safe operation.

Before operation:

1. **Open overhead vent or turn on exhaust fan.**
2. **Open window(s).**

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

Propane Consumption

All your propane appliances are operated intermittently. Your furnace is naturally the appliance using the most fuel, especially if freezing conditions are present outside. On a very cold and windy day it is conceivable that your coach could consume most of a 30 pound propane bottle.

Propane consumption depends mostly upon individual use of appliances and the length of time operated. Each gallon of propane produces about 91,500 BTUs of heat energy. Following is a list of typical appliance consumption when turned on fully for one hour of operation:

APPLIANCE	LP GAS CONSUMPTION
Water Heater	8,800-12,000 BTU
Furnace	35,000-40,000 BTU
Stove/Oven	6,500-9,000 BTU
Refer	1,200-2,400 BTU

Note: The above chart represents many different models.

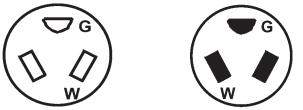
CAUTION

If you have double bottles and a standard regulator on your RV, use only one bottle at a time. Otherwise the gas supply will be drawn equally from both bottles until supply has been totally exhausted. Using one bottle until it is empty, then using the second bottle will allow you to fill the empty bottle at your convenience without being totally out of propane.

ELECTRICAL SYSTEM

General Information

The electrical system in your recreational vehicle is designed using both 120 volt AC (alternating current) and 12 volt DC (direct current) capabilities. All installations and designs are built to comply with safety requirements of ANSI standard A119.2, National Electric Code and Canadian Standards Association.



50-A, 125/250-V, 3-pole, 4-wire, grounding type

All coaches manufactured by OPEN RANGE RV have 50 amp service pre-wired into the breaker box.

⚠ CAUTION

A 50 amp service is a 240-volt hook-up. There is no appliance or other component requiring 240 volts in this coach. For more information, see the section later in this chapter.

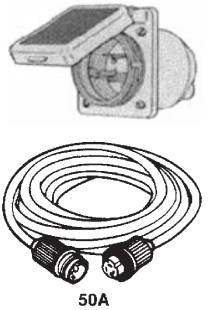
Changes and Modifications

Any changes, alternations, additions, and/or modifications need to be performed by qualified electrical technicians, using only approved components which meet safety and code requirements. This includes owners, dealers, etc. who desire to make changes. The manufacturer is not responsible for any changes, or alterations, made to the 120 AC system of the coach.

120-Volt A/C System

Power Cord 50 AMP

A 50 amp rated, fully detachable power cord is supplied with your coach. Open the hatch door on the exterior of the coach. Pull the cord out and attach one end to the coach outlet and the other end to the 120-volt power source.



Energy will enter through the main breaker and is distributed through circuit breakers to the wall receptacles and appliances. This power cord will be approximately 26 to 28 feet in length. Each cord has the correct gauge of wire to carry the correct voltage to coach.

In some hook-ups the power cord may not be long enough and extension cords are required. ALWAYS use a cord with the gauge of wire equal to or greater than the power cord. Should you use a cord with a smaller wire, overheating, loss of amperage, and possible melting could occur.

DO NOT leave any unused portion of an extension cord in a “coil” as it may overheat, short-circuit wires and potentially destroy your extension cord.

⚠ WARNING

Never use a “cheater” plug or extension cord which breaks the continuity of the ground circuit to the grounding pin.

⚠ WARNING

NEVER, under any circumstances, remove a grounding pin in any cord or plug. It may mean the difference between LIFE OR DEATH.

Circuit Breakers and Box

On a 50 amp system, a maximum of 12 distribution circuits are permitted. All breakers are sized according to power needs on each line.

⚠ WARNING

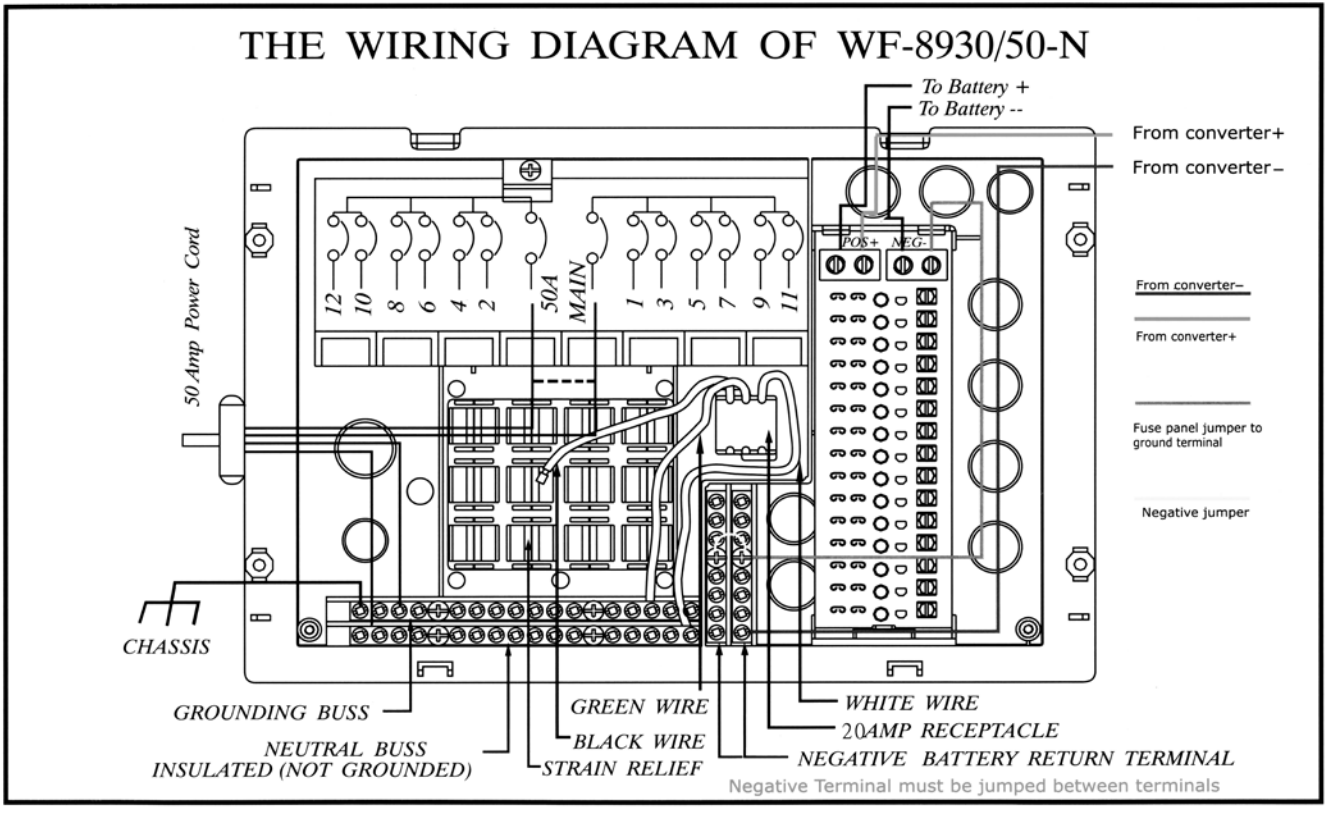
Do not replace breakers or fuses with any that are rated at a higher amperage. Over fusing may cause a fire by overheating the wire.

The following generic drawing *(next page)* shows the circuit breaker alignment. Depending on the size, floor plan and options of your coach, circuit one through twelve will vary and possibly not all circuits will be used. Number one and two are generally the 20 amp air conditioner circuits. Coach is pre-wired for a second roof air in the bedroom.

An owner must realize and understand that a coach has a total of 50 amp service available to be used. Conserving and choosing which appliance has priority in consumption needs to be part of the planning.

Don’t forget loose items such as toasters, electric skillets, and coffee pots also consume power. Include these also in your planning.

THE WIRING DIAGRAM OF WF-8930/50-N



GFCI Protection

Each coach has a GFCI, Ground Fault Circuit Interrupter, protection receptacle installed into the circuitry. This GFCI device is designed to protect people from hazards of line to ground electric shock. The purpose is to reduce possible injury caused by electrical shock, resulting from faulty insulation, improper polarity and related to moisture and/or earth ground.

The third “round” pin on the receptacle is very important for this safety device to function correctly. NEVER cut off this pin. When using an appliance in the receptacle without this provision, use an adapter with a pigtail to be attached to the receptacle box to complete the circuit.

This GFCI receptacle will not protect against short-circuits or overloads. The circuit breaker or fuse in the electrical panel which supplies power to the circuit provides this protection.

Polarity is extremely important. You should be certain that the polarity of the external power is not reversed, in order to avoid harm to appliances and personal electrical shock. Polarity testers may be purchased in most electrical and hardware stores with the GFCI tester built in.

During use of the recreational vehicle it is suggested to test this receptacle once per month. To test press the “TEST” button in. The “RESET” button should pop out. Power should now be turned off at this receptacle and any receptacles down line. To restore power push, then release the “RESET” button.

12-Volt DC System

Most interior lights and appliances receive 12-volt DC power through converter output and/or the auxiliary battery. Exterior lights and brakes also use 12-volt DC power from the tow vehicle battery and/or auxiliary battery through the seven way connector and wire attached to the tow vehicle. Following are explanations of various items.

Converter

The heart of your 12 volt DC system is enclosed inside of load center, including 12V fuse panel, 120V breaker panel and converter.

Fuse panel has 15 fuse positions, check on output size of your converter.

All converters have solid state electronic components internally to produce “clean” 12V DC power.

This load center will have a brown plastic front (World Friendship).

Some models have fuses and breakers in a distribution box, with converter installed in a different location (not mounted into distribution box).

⚠ WARNING

DO NOT connect 240 volt direct power to the coach through a reducing adapter. By doing so, "positive" power will be sent through neutral/white wire damaging appliances.

The function of a converter takes 120-volt AC power and transforms this energy into 12-volt DC power as used in your coach. 12-volt DC supplies power for some appliances and most interior lights. The floor plan and size of coach indicate the output size.

When the converter receives 120 AC power, it transforms power into 12-volt DC without any manual switches. The converter also charges the auxiliary battery(ies) when installed on the coach and attached to 120-volt AC power. The third function of a converter is to send 12-volt power to the fuse panel and throughout the coach.

Each converter has a "built-in" fan which operates through a load sensor control or temperature sensor. As more current is drawn, fan will speed up, run faster, or slow down, based on amp draw and/or temperature. Should the fan not run at all, the converter may overheat and will cut-out and/or stop.

The Battery Disconnect switch, located on the front bulkhead in the storage area, has one function – to cut-off or supply 12 volt DC power from the battery (if so equipped) to the 12 volt DC distribution system. Insert attached red plastic key in off position and turn 90º to "on" position. Key won't come out in the "on" position. Twelve volt DC power now moves from battery, through converter to coach. When you wish to charge the battery by power converter, the switch must be in "on" position providing you have 120 volt AC power available.

The "cut-off" switch system is on Open Range as standard.

Recommended batteries are of deep-cycle type as you need longer, slow consuming power rather than cold-cranking power. A battery is always required for a break-away switch to function.

A battery requires routine maintenance for long life. First, terminals need to be kept clean to avoid corrosion. Second, a battery used daily will consume water as long as the converter is in operation. Be sure to check the battery no less than every 30 days and keep the battery

filled with distilled (rain) water. Most good deep cycle batteries are NOT maintenance free.

A converter will not overcharge a battery unless a battery has a dead cell, or the converter has a malfunction. Some type of converters have full battery charge shut-off. Other types reduce the rate of charge as battery conditions reach 12.7 volts DC or 1.265 specific gravity at 80°F. By electronic standards, a battery is discharged at 10.5 volts. Dropping voltage lower than 10.5 volts will begin damaging plates in the battery.

The interior lights will operate from the converter and/or auxiliary battery. Some lights will have wall switches and other lights have switches in the lights themselves.

Circuit Breakers and Fuses – 12 Volt DC

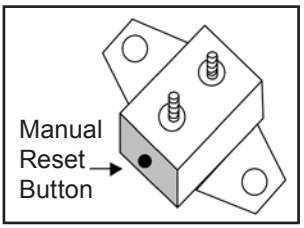
These two items have been installed in your coach to protect circuitry and components:

Fuses are placed into the fuse panel with the converter or into a separate panel near the converter with access inside of coach. Fuses are placed in your electrical system to protect wiring and components when overloads appear or short circuits occur. Radios, stereos and possibly other components may have “in-line” fuses attached to their own wire harness.

Circuit Breakers are placed at several locations. First, a manual or automatic reset breaker is placed within 18 inches of the auxiliary battery. On the manual reset a small “plunger” will trip if overloaded. By pressing this “plunger” in, it will reset when cooled down. This plunger may be on the back side of the breaker.

Automatic reset breakers will “reset” by themselves in 15 to 30 seconds when tripped.

A green (30) amp, gold (20 Amp) or red (10 Amp) automatic reset breaker is installed in the load center to operate your slide-out(s).



Manual Reset Breaker

All wiring used in your coach meets correct amp rating correlated with fuses and breakers in respective panels as required by code.

The RV battery is placed in parallel circuitry with the battery on your tow vehicle. Care needs to be exercised not to drain both batteries together. There are two methods of avoiding this condition:

First, disconnect the tow vehicle when parked and/or using your coach. Second, a battery isolator may be installed in your tow vehicle to prevent power drain from batteries in both vehicles. This device “isolator” has two useful purposes. First, it sends current from the alternator to both batteries simultaneously. Secondly, the isolator prevents draw from the recreational vehicle through the battery of the tow vehicle, preserving power to start the engine.

Contact your dealer should you desire an isolator for your protection. Two types are available, mechanical type, or solid state which is the best and most expensive.

Description

WFCO 600 watt power inverters are engineered for outstanding performance. WFCO inverters provide high efficiency power at full load conditions, with safeguards which include overload protection, over-temperature protection, and short circuit protection. The cooling fan enhances efficiency, as its operation is controlled by the amount of load incurred by the inverter.

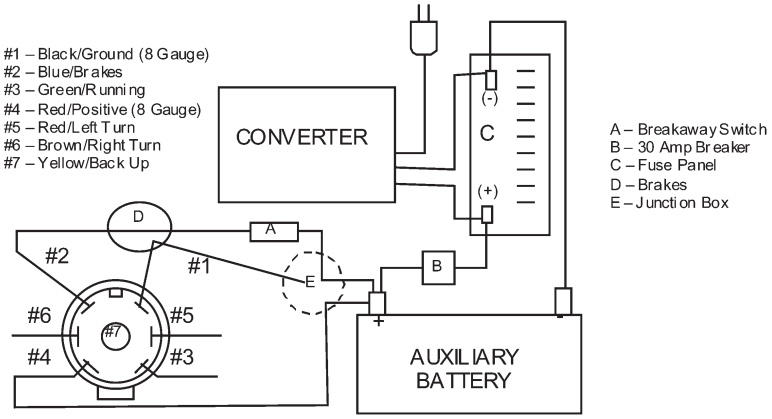
When connected to either shore power or a generator the WFCO inverter provides direct AC pass-through. Two models are available for 12 V input voltages. FCC Class B compliance means the units will not cause interference with televisions, radios, and other amenities. An internal 10-amp transfer switch is integrated into each unit, providing power changeover protection between AC pass through (shore line or generator) and AC output of the inverter being generated from a12 volt DC source (battery, solar panel or wind turbine). A remote control allows manual on/off of the inverter, and has an indicator light that displays operation modes. A remote control allows manual on/off of the inverter, and provides an indicator light displaying operation modes.

Specifications

Input Voltage	:	10.5 - 15.3 Vdc
Output Current	:	(No load): 0.87 A
Inverter Type	:	12 Vdc to 120 Vac
Voltage Output	:	100 Vac - 120 Vac / 60 Hz
Current Output	:	5 Aac
Output Waveform	:	Pure Sine Wave
AC Pass Through	:	Yes
GFCI	:	No
Efficiency (Full Load)	:	87%
Input Level Indicator	:	Red / Orange / Green LED
Dimensions	:	11.42" (L) x 7.05" (W) x 3.15" (H)
Weight	:	6.6 lbs.

⚠ WARNING

DO NOT replace circuit breakers or fuses with a higher current rating than those supplied with your coach. Over-fusing can cause a fire hazard by overheating the electrical wiring.



⚠ CAUTION

Any electrical installation that does not meet the criteria of the manufacturer's specification will VOID THE WARRANTY on the electrical system.

Exterior Lights and Connector, 12 Volt

Power for exterior lights, such as tail lights, turn, clearance and brake lights, is supplied by the tow vehicle.

The connector between the recreational vehicle and the tow vehicle may build up corrosion due to moisture. You may need to clean these terminals occasionally to insure good electrical contact.

Porch Lights

Porch lights are placed on sidewalls, left and right side. Switches for these lights, depending on models, will be on the Master Control Panel. Occasionally, the switch will be on the light itself.

Brake Wiring

10 inch electric brakes operate on 12-volt power supplied from the tow vehicle, transferred through the blue-positive and white-negative in the seven way harness. There are no fuses or breakers installed in this brake wiring. More information on the brake system is found in Chapter Three - Using Your RV.

Bulbs

The table below lists bulbs and their numbers. Use the bulb suggested on the light fixture, if listed.

Ceiling – 12 volt	1003 or 1141
Power Hood	912
Back-up Light	1076
Clearance Light	193
Security Light	1156
Porch Light	93
Tail Light	1157
Turn Light	1157
Brake Light	1157
Florescent	F15T8CW
Bathroom Strip Light	9-019
Power Slide Out	921
Under Cabinet	1383
License Plate	67

CHAPTER 5

APPLIANCES

OPEN RANGE RV COMPANY places brand name, quality-built equipment, as guided by current codes and standards, in all recreational vehicles. Some appliances are built and equipped to operate on propane gas ONLY. DO NOT attempt to operate on natural, butane or methane gas.

Each appliance has its own specific manual, written and published by its manufacturer. These manuals supply additional information about the appliances in your recreational vehicle.

FURNACE

The furnace in your recreational vehicle requires 12-volt DC electrical current and propane gas energy for correct operation. The furnace receives 12-volt DC power from a fully charged battery and/or the converter in the coach. This power must be present before propane gas can enter through the control to the burner tube.

The combustion chamber is completely sealed to prevent any carbon monoxide from entering into the coach. Oxygen is drawn into the chamber through the upper vent and exhaust fumes expelled through the lower vent.

⚠ WARNING

Be sure to follow all directions to operate furnace to prevent any damages or malfunctions. Errors could cause personal injury.

From the time you turn the thermostat on, there is a delay built into the furnace to perform a purge cycle preventing any possible gas vapor build-up in the chamber.

⚠ WARNING

DO NOT operate furnace while vehicle is in motion or being towed.

Operating Instructions

1. Stop! Read Users Information Manual supplied with the furnace.
2. Turn the manual valve (if so equipped) or the valve at the outside propane tank to the “OFF” position. Do not force.
3. Move the “OFF” lever located at the bottom of the thermostat to the “ON” position.
4. Set the thermostat above room temperature to begin blower operation. A slight delay will occur before the blower comes on. Allow the blower to run for five minutes for the combustion chamber purge cycle.
5. After five minutes, move the thermostat lever below room temperature. The blower will remain on. Wait approximately two minutes for the blower to go off.
6. Open the manual shut-off valve (if so equipped) or the valve at the outside propane tank. Correct operating characteristics depend on the valve being positioned fully open. Never attempt to operate with a valve partially closed. NOTE: This furnace is equipped with a shut-off switch. With the switch in the “OFF” position, gas will not flow to the burner, nor will the furnace operate.
7. Set the thermostat lever to the desired setting. If set above room temperature, the blower will come on.

NOTE: During initial firing of this furnace, a burn-off of excess paint and oils remaining from the manufacturing process may cause “smoking” for five to ten minutes.

To Shut Down:

1. Set thermostat to the “OFF” position by moving the lever on the bottom of the thermostat to the “OFF” position.
2. Turn the manual shutoff valve (if so equipped) to the “OFF” position. Do not force.

External Vents. Always be sure these vents are clear of any objects like screens, duct tape, etc.

⚠ WARNING

Do not install screens over the vents for any reason. Screens will become restrictions causing unsafe or inefficient operation.

Ducting. Wall or floor registers, and return air grills MUST be kept clear of any obstructions. Any such restrictions will prevent the furnace from correct operation. Closeable registers will reduce air flow. Never shut registers off completely, possibly causing furnace to limit out and shut down.

Gas Odor. Should you smell propane gas vapor in your recreational vehicle, follow these listed guidelines:

1. Evacuate all persons from the vehicle.
2. Shut off the gas supply at the propane gas container.
3. DO NOT touch any switch, phone, or radio in the vehicle.
4. Leave the entrance open for ventilation.
5. Contact a qualified RV technician or gas service technician for repairs.
6. DO NOT use or reside in the vehicle until the leak has been repaired.

Only qualified technicians with proper equipment should make any mechanical adjustments.

Gas pressure, as defined in ***Chapter 4 - Systems***, is extremely important. A dial gauge or U-tube manometer is required to perform tests and adjustments. Pressure must be set at 11 inches w.c. (water column) plus or minus 1/2 inch. Incorrect gas pressure can cause any appliance to operate inconsistently and cause poor combustion.

Voltage must be between 10.5 volts to 13.5 volts at the furnace during operation. Below 10.5 volts the furnace will shut down. Both high and low voltage places excessive wear on the motor and brushes.

Any mechanical adjustments, such as electrode adjustments, should be performed by a qualified service technician.

RANGE AND OVEN TOP BURNER OPERATION

The cooking appliance used in Open Range's product is a standard oven with three top burners. The appliance operates with propane gas only, never natural gas or methane.

⚠ WARNING

Do not operate this appliance unless the privacy curtain is secured. Failure to comply could result in fire or serious injury.

In the event of an accidental blow out, turn gas off by turning control knob clockwise to “OFF”. Wait five minutes before attempting to relight the burner. Failure to follow these instructions could result in a fire or explosion.

If the burner should go out while cooking, or if there is an odor of gas, turn the control knob(s) clockwise to “OFF”. Wait five minutes for the gas odor to disappear. If the gas odor is still present – DO NOT relight the burners. See instructions in the appliance manual.

Oven and Range Combination

Stove Top Ignition System

The top surface burner ignition to light system requires manual lighting: matches or a hand-held igniter.

1. Know which knob controls which burner. Always be sure all burners are turned off when the stove is not in use.
2. Depress knob and turn fully counterclockwise to “LITE” position.
   a. Verify sufficient gas supply before attempting to light the burner.
      1. Air in the gas line will significantly delay burner ignition. The burner may light unexpectedly as the air in the line clears and is replaced by propane gas. This unexpected ignition could burn you. Air in the gas lines may occur after the vehicle gas bottle and/or tank is refilled, during and after servicing other appliances on the same gas line, etc.
   b. **Do not attempt to light more than one burner at a time.**

⚠ CAUTION

Hand held igniters may be used but be sure they are the type designed for lighting open flame burners

3. If any burner should extinguish after initial lighting or due to accidental blow out, turn gas off by turning control knob clockwise to “OFF”. Wait five minutes before attempting to relight the burner. Failure to follow these instructions could result in a fire or explosion.

   If the burner should go out while cooking, or if there is an odor of gas, turn the control knob(s) clockwise to “OFF”. Wait five minutes for the gas odor to disappear. If the gas odor is still present – DO NOT relight the burners. See instructions in the appliance manual.
4. To turn the burner(s) off, turn the appropriate control knob clockwise to “OFF”.

⚠ DANGER

All pilot lights, appliances and their ignitors (see operating instructions) shall be turned off before refueling of motor fuel tanks and/or LP-Gas containers.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

Oven Burner

Note: Before the oven burner will operate, the oven pilot must be lit.

1. Lighting Oven Pilot
   a. Be sure ALL valves are in the “OFF” position. The oven control knob should be the “Off” position.
   b. Be sure main gas supply is on.
   c. Open the oven door; smell for gas. If you smell gas STOP! Read and follow the instructions in your appliance manual.
   d. If you do not smell gas, depress and turn the oven control knob to “Pilot On:. This will allow gas to the oven pilot.
   e. Immediately light oven pilot with a match. A small flame will be noted at the top of the pilot burner. NOTE: If the appliance has not been operated for a long period of time, a longer waiting period for ignition of the pilot may be necessary due to air in the gas line.
2. Operation of Oven Burner
   a. Depress and turn the oven control knob counter-clockwise to the desired setting. There will be a delay of approximately 45 seconds before the oven burner comes on. This is normal and no gas escapes during this delay. It is also normal for the oven burner flame to cycle off at all temperature settings except “Broil. This maintains a constant temperature within the oven.
3. To shut down the oven burner turn the oven control knob clockwise to “PILOT ON” position. At this position, the oven pilot will remain lit.
4. To shut down the oven pilot light turn the oven control knob to “OFF”, at this position, the oven pilot will go out.

WATER HEATER

Several energy sources are available to heat water: propane gas and 12 volt DC combination. A 120 volt AC is included with either source in a combination form.

⚠ CAUTION

Before attempting to operate any water heater, you must be sure the heater is full of water. Failure to fill with water will result in the tank warping and the element burning up.

⚠ WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

DSI Models

This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because propane is heavier than air and will settle on the floor.

⚠ WARNING

If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if the appliance is not maintained in accordance with the instructions in this manual then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.

⚠ WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

What To Do If You Smell Gas:

- Do not try to light any appliance.
- Do not touch any electric switch.
- Do not use any phone in your recreational vehicle.
- Immediately call your gas service center from your neighbor‘s phone. Follow the gas service centers instructions.
- If you cannot reach your gas supplier, call the fire department.

This is an automatic gas valve, no adjustments are necessary. Do not attempt to repair the gas valve. This may result in a fire or explosion.

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

Before operating the water heater, check the location of the vent to make sure it will not be blocked by the opening of any door on the trailer. If it can be blocked, do not operate the water heater with the door open.

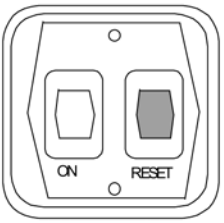
Operating Instructions:

1. STOP! Read the safety information provided.
2. Turn off all electric power to the appliance.
3. Turn “OFF” gas supply.
4. Wait five minutes for gas to clear the area. If you smell gas, STOP! Follow previous instructions, *What To Do If You Smell Gas.* If you do not smell gas, go to next step.
5. Turn “ON” the gas supply.
6. Turn on electrical power to the appliance.
7. Turn the switch to “ON” position. If the burner does not light, the system will automatically attempt two more tries for ignition before lock out. NOTE: Each ignition cycle will have a fifteen second purge before spark cycle if the system is a three try system.
8. If lock-out occurs before main burner lights, turn switch to “OFF”, wait five seconds and turn switch to “ON” position. This will restart the ignition cycle. The first start-up of the heater may require several ignition cycles before all air is purged from the gas lines.

If the burner will not come on, the following items should be checked before calling a service person:

1. Switch turned off.
2. Gas supply to heater is empty or turned off.
3. Reset button on ECO is tripped.

To Turn Off Water Heater:



1. Turn switch to “OFF” position.
2. Turn off the electrical power to the appliance.
3. Turn off gas supply.
4. If the vehicle is to be stored or the heater is going to be turned off while subject to freezing temperature, drain the water heater.

120 Volt AC Option

Electric water heaters are designed to operate with a minimum amount of service problems; however, proper operation and care is essential.

By far the most common trouble with electric water heaters results from energizing the water heater before it is filled with water. Even brief operation of the electric element without water in the tank will burn-out the electric heating element.

To energize the electric heating element, turn the switch to “ON”. The switch is located behind the water heater door in the lower left corner of the control housing. The water temperature will be regulated by the thermostat.

When you have this 120-volt AC option, you will find an additional wall switch noted as “water heater”. This will turn on 120 volt to energize the water heater.

⚠ CAUTION

DO NOT operate the water heater with two energy sources in operation or without water.

Winterizing Your Water Heater

If your water heater plumbing system is equipped with a bypass kit, use it to close off the water heater. Drain the water heater completely and leave the water heater closed off (out of the system) in the bypass position particularly if you are introducing antifreeze into the plumbing system.

Antifreeze can be very corrosive to the anode rod creating premature failure and leave sediment in the tank. If the plumbing system is not equipped with a bypass kit, and you intend to winterize by adding antifreeze to the system, remove the anode rod (storing it for the winter) and replace it with a 3/4 inch drain plug.

REFRIGERATOR

OPEN RANGE recreational vehicles use numerous different size and model numbers of refrigerators operating on 120- volt AC. Performance of refrigerators depends on various factors, such as, energy, venting, leveling, humidity and atmospheric heat temperatures, but not limited to these. All refrigerators are designed with absorption type of cooling units requiring careful leveling and venting conditions. (For residential, see manufacturer's owner's manual.)

Leveling

For correct operation, the refrigerator must be within three degrees of level in any direction. Continued operation outside of these limits will result in irreparable damage to the cooling unit in the refrigerator.

Venting

For an absorption unit to operate fully it must have two vents. One vent is on the roof or sidewall at the upper end of the refrigerator, and a second vent is a lower service vent and door at the lower area of the refrigerator. A vent installed on a roof must have a screen in place to avoid birds from entering and causing problems.

Units with two-side vents as in slide-outs, require a 12V fan to be in operation. When upper cooling fins reach 150° Fahrenheit, the fan will automatically start to operate. The positive wire has a five amp in line fuse installed. Access to the fuse is inside of the lower service vent door.

Battery Drain Information

To control operating functions on several models of refrigerators, a 12-volt DC power source, battery and/or converter are required. For gas operation .5 amp is required through the power supply to keep the solenoid open to supply propane gas to the burner as needed to continue to cool.

Models with a moisture reduction heater (humidity dryer) require an additional .24 amp. This totals less than 1 amp. The drain at .74 amp is low. However, after three to four days of continuous draw your battery will be down, closing the solenoid and shutting down cooling capability, when the battery drops to 11.5 volts DC.

During AC operation, 12-volt DC is required to operate the humidity heater, the light display, electronic thermostat, and interior light (when equipped).

Door Seal

To maintain cooling efficiency the door must seal completely on all four sides along the door gaskets. Frequent frost build up or reduced cooling are indicators of air leaks around the doors. Place a strip of paper the size of a dollar bill between the flange and door gasket. Close the door and pull the paper out. There should be a light frictional drag indicating proper seal. Should the paper feel loose, the gasket is not sealing well. Contact your dealer or service center.

⚠ CAUTION

Do not use undue force or jerking action when opening the refrigerator door. Air temperature differences can cause a partial vacuum within the cabinet requiring a firm but steady force to open the door. A sudden jerk could cause door damage or personal injury.

Door Latch

A positive or full locking latch is not permitted through codes. Each latch has a rating by pounds of pressure, yet will prevent the door from opening during travel.

Operation in Transit

During camping or parking, the refrigerator must be level for best operation. While traveling, the up and down hill movement of the coach, will not affect the performance of the refrigerator.

Defrosting and Cleaning the Refrigerator Interior

Your refrigerator is not frost free and will require periodic defrosting. To defrost, turn the refrigerator off. Empty the freezer and the fresh food compartments. Placing a pan of hot water in the freezer will reduce the defrosting time. Leave the drip tray under the cooling fins. After frost has melted, empty the drip tray and clean the refrigerator.

Add a small quantity of mild dish detergent to lukewarm water and wash the interior of the refrigerator. **Do NOT use abrasive cleaners; they can damage the interior surfaces of the refrigerator.** Rinsing both compartments in a solution of baking soda and water (one tablespoon of baking soda to one quart of water) will freshen the interior and neutralize odors. Wipe the interior with a soft dry cloth to prevent water spots. Clean

the door gaskets in the same manner as the refrigerator interior. This will help to prolong the life of the gaskets.

See manuals being supplied by the manufacturer for additional information and operating procedures.

MONITOR PANEL

Your panel through modern technology will supply the charge condition of your battery and water level information from your water tanks.

Operation requires 12-volt DC power, supplied by the battery or converter. Sensors, one negative and three positive, attached to a resistor feed information to the display panel. To operate, place finger on button and push. A light will illuminate indicating the water level of tanks or charge condition of battery. “Galley” will light only when floor plan includes the second gray water holding tank.

The switch on the lower right corner is for water pump operation. When in the “ON” position, pump will run until 40 to 45 PSI is achieved. The pump will shut off and restart at 20 pounds of pressure. Turn pump switch “OFF” when pump is not in use.

When pushing the battery button, the highest light coming on indicates the battery condition: C-charging at 12.7 volts; G-good at 11.9 volts; F-fair at 11.2 volts; L-low at 6.0 volts. Press only one button at a time as one set of lights serves all functions.

You will find monitor panels inside of control panel, just inside of entrance door, along with slide out switches.

CHAPTER 6

MECHANICAL MAINTENANCE

Your recreational vehicle is designed to be as maintenance free as possible. However, all movable vehicles require some care to reduce the possibility of unwanted breakdowns during travel. Normal maintenance is required to maintain warranty coverage, reduce wear, and prolong the life of you coach.

Note: Some areas in this chapter may not be applicable to your coach.

AXLE / BRAKE SYSTEM

The wheel bearing in your coach are pre-greased at the point of assembly. At six months or 6,000 miles of use, inspect the bearings for lubrication and wear. Repack bearing as needed, at least once per year. To protect against winter's moisture, we suggest an inspection and lubrication of bearings at the end of each camping season. Always replace seals when repacking bearings.

Use a high quality wheel bearing grease available at automotive part stores. Fibrous or non-fibrous is not important.

Should bearing or cone (race) become damaged or worn, both must be replaced together. Over packing the hub results in grease seeping out of the dust cap and wheel seal.

BRAKES – 10 OR 12 INCH

When a coach's brake system is new, the brake shoes and drum are not completely meshed together. The first adjustment should occur at 200 to 1,000 miles, or when brakes have been engaged 100 times – referred to as "burnishing." After initial adjustment, brakes should be readjusted every 3,000 miles. Under adjustment can cause poor braking and the adjuster wheel to fall apart. Use a qualified technician to perform this maintenance procedure.

TIRES

Inspect and test air pressure no less than once per week, perhaps daily during travel time. Correct PSI air pressure is listed on each tire as per rating. Testing must be performed when tires are cold before beginning to travel.

Tires heat up during travel and air pressure increases. DO NOT release air pressure if over full when tires are hot from driving.

To change tires, raise coach, place the jack underneath the main frame rail. Use blocking to assure safety to yourself. Never raise the coach by placing the jack under any axle part, beam, spring and/or attachment part. Before raising flat tire from ground, loosen lug nuts, but DO NOT remove until the tire is free from the ground.

STEP ASSEMBLY

The step assembly is subject to all types of weather elements and requires the following maintenance:

Covering nicks and scratches:

1. Seal any nicks or scratches with an automotive grade primer to prevent rust.
2. Once the nick or scratch has been sealed, cover the damaged area with an automotive grade high-gloss paint.

Lubricating the mechanism (every 30 to 60 days):

1. Carefully clean the area around the pivot points (the rivets involved in the motion of the mechanism).
2. After cleaning, lubricate the pivot points (to pinpoint this area, located the washer between the parts). An automotive grade, non-staining lubricant is recommended.

LUG BOLTS

Due to Aluminum mag wheels, lug bolts must be checked numerous times when new. Retighten at 50 miles and again at 200 miles. The third retightening should be done at 500 to 700 miles.

Anytime you remove and reinstall a wheel, we recommend retightening the second time at approximately two hundred miles.

Tighten lug bolts at 85 to 95 foot pounds. Torque using a cross tighten sequence – five stud: 1-3-5-2-4; six stud: 1-4-2-5-3-6; and eight stud: 1-5-3-7-2-6-4-8.

Failure to check and tighten wheels can cause tire and wheel loss, damage to coach, and possible property damage should the wheel and tire hit property. This is a non-warranty situation.

HITCHES – TRAVEL TRAILER AND FIFTH WHEEL

See the manufacturers printed material for information supplied by the installer.

JACKS – FIFTH WHEEL

Once each year:

1. Extend landing legs as far as possible, clean drop tube and inner ram tube. Coat exposed surface of tubes with silicone spray lubricant.
2. Coat inside of handle alignment tube with silicone spray lubricant.
3. Oil shaft bushing in gear box and leg gear heads with SAE 30 oil.
4. Each fall before storing your coach, remove the flat plate (2000#) or cap (3000#) from the upper tube of jack. Inspect and re-grease gears as needed.

PROPANE GAS SYSTEM

In the spring or the beginning of each camping season:

1. Inspect all propane gas lines, steel and copper for crimps, bends, kinks, and/or road damage.
2. Test all fitting with soapy water or mechanical leak detector. DO NOT use soap containing ammonia or chlorine.
3. Regulator(s) should be calibrated and adjusted to 11 inch w.c. pressure. It is suggested this test be performed each spring, with proper equipment, for correct operation.
4. Should a leak occur, repair it immediately.

WATER SYSTEM

The fresh water system utilizes plastic lines, steel clamps, and brass connectors, needing no maintenance unless leakage occurs. Should a leak occur it requires immediate action. Contact your dealer for assistance to repair a water leak.

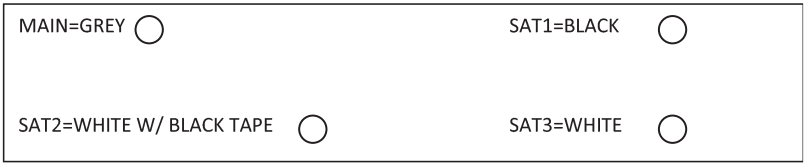
SEALANTS

Rain leaks find their way into the coach where sealants have failed for numerous reasons. These leaks require immediate attention. All sealants used in construction are subject to weather elements and MUST be inspected and reapplied as required twice per year.

Putty tape, as used under extrusions, is subject to dry-out conditions by sun heat and winter freezing, allowing water seepage. Cap seal (surface) also may crack, dry out, shrink, and pull loose from surface materials. Annual inspection is required, and resealing is required as normal maintenance.

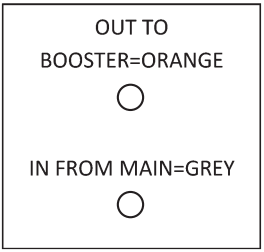
SATELLITE CABLE HOOKUP

CONVENIENCE CENTER

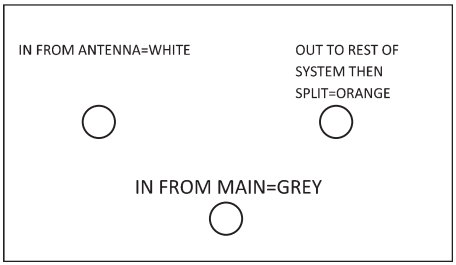


FRONT BEDROOM

There will be a loop installed here so that the whole system (all TVs) can be run off of this one signal.



BACK OF BOOSTER



1. Main = Grey – Direct to front bedroom TV – Feed whole system.
2. Sat1 = Black – TV Furthest to the rear.
3. Sat2 = White w/Black Tape – Basement/outside Ent. Comp.
4. Sat3 = Either not used or the living room TV if there is a bunk TV.

Each TV will have a plate behind it with two inputs, one is from the main (which will be for your antenna and or the signal that the front TV is getting (if you so choose), and the other is a direct line from the convenience center.

OPEN RANGE RV COMPANY

We congratulate you on your purchase of a OPEN RANGE RV recreational vehicle. You have chosen a quality built RV which should provide you with many years of camping memories and fun.

The recreational vehicle you have purchased has been inspected by our trained inspectors and fully meets our high quality standards.

As the owner of a new OPEN RANGE RV COMPANY fifth wheel or travel trailer, you can rest assured that we will do all we can to keep you a “happy camper.” Naturally, your selling dealership is always happy to help you with any questions you may have or service you may need.

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