

# 2001 ALUMASCAPE FIFTH WHEEL OWNER'S MANUAL QUESTIONNAIRE

Your suggestions are very important to us. We are continuously improving our manuals to help make traveling as enjoyable as possible. We appreciate you taking the time to answer the following questions. When you are finished simply fold the questionnaire and return it, postage paid, to our technical publications department. Please feel free to add an additional page if you desire.

**1. Was the information presented in this manual helpful in acquainting you with your new recreational vehicle? If not please list any area(s) we need to expand or improve on.**

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**2. Were the operating instructions clearly written, and were you able to follow the steps without any difficulty?**

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**3. Was the overall appearance and lay-out of this manual what you expected to see in your new fifth wheel?**

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**4. Is there any additional information you would like to see added to the owner's manual?**

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**Additional Comments:** \_\_\_\_\_

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**Name** \_\_\_\_\_ **Model & Year** \_\_\_\_\_

**Phone** \_\_\_\_\_ **Serial Number** \_\_\_\_\_

**Address** \_\_\_\_\_

**Is this your first fifth wheel? Yes No**

Cut along dotted line.



FOLD

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Cut along dotted line.



*A* LUMASCAPE  
FIFTH WHEEL



# **SECTIONS**

**INFORMATION & WARRANTY**<sup>1</sup>

**OPERATING & SAFETY**<sup>2</sup>

**APPLIANCES & EQUIPMENT**<sup>3</sup>

**WATER SYSTEMS**<sup>4</sup>

**LP GAS SYSTEM**<sup>5</sup>

**ELECTRICAL SYSTEMS**<sup>6</sup>

**CARE & MAINTENANCE**<sup>7</sup>

## SIGN DEFINITIONS



*This sign indicates a **NOTE**.*



*This sign indicates a **WARNING** or **CAUTION** with additional information attached.*



*This sign indicates **INSPECTION** is required.*



*This sign indicates **ASSEMBLY/INSTALLATION** or **DISASSEMBLY/REMOVAL** is necessary.*

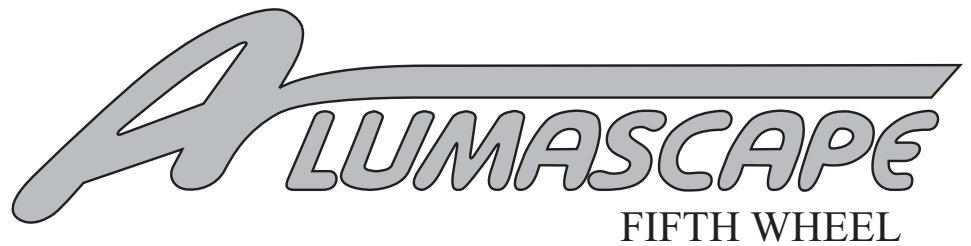


*This sign indicates the specified part requires **OIL/LUBRICATION**.*



*This sign indicates a reference to the **WARRANTY INFORMATION FILE** located within the fifth wheel*

Product information and specifications are shown herein as of the time of printing. Holiday Rambler reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligation.



## **SECTION 1 INFORMATION & WARRANTY**

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In time you will develop a knack for spotting wonderful little roadside locations by turning off the main highway and exploring. There are many modern recreational vehicle parks (including county, state and federal parks) with good facilities where you can obtain hookups for electrical, water and sewage connections. Directories are published which describe these parks and availability of services and hookups. On overnight or weekend trips chances are you will not fill up the sewage holding tank, deplete water or LP-Gas supply or run down the battery that supplies the living area with 12 Volt DC current. Many gas stations have installed sanitary dumping stations. Publications are available which list these dumping stations. When you stop for the night your fifth wheel is built to be safely parked in any spot that is relatively level and where the ground is firm. Your facilities are with you. You are self-contained.

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Only by insuring your confidence and satisfaction with our products and services can we have continued success as a manufacturer of recreational vehicles. We believe a good relationship with our customers is just as important as improving the technical excellence of our products. Your authorized dealer is pleased to help you with instructions about your fifth wheel and to offer service when you need it. Most problems arise from misunderstandings about warranty or service needs. If problems remain after you have consulted your dealer contact our Consumer Service. We will work with the dealer to see that every attempt to resolve the matter is made.

**Holiday Rambler Consumers Affairs Department  
606 Nelson's Parkway  
Wakarusa, Indiana 46573  
800-522-7519 or 877-466-6226**

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If you believe that your fifth wheel 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 Holiday Rambler. If NHTSA receives similar complaints it may open an investigation; and if it finds that a safety defect exists in a group of fifth wheel, it may order a recall or remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer or Holiday Rambler. To contact NHTSA you may either call the Auto Safety hot line toll-free at 800-424-9393 (366-0123 in Washington DC area) or write to:

**NHTSA  
US Department of Transportation  
400 Seventh St.  
Washington, DC 20590**

## **INTRODUCTION**

The fifth wheel has been inspected by factory personnel throughout the manufacturing process. Your dealer performs additional pre-delivery inspections and system checks and will help you understand the limited warranty and complete any necessary forms.

## **CUSTOMER RELATIONS**

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- A customer orientation on the fifth wheel, systems, components and their operation.
  - Ensuring the customer receives an owner's manual and a complete owner's information file, with warranty cards and registrations for the fifth wheel and separately warranted products including detailed operating and maintenance instructions.
  - Reviewing limited warranty provisions with the customer, stressing the importance of mailing warranty cards and registrations to manufacturers within prescribed time limits to avoid loss of warranty coverage. Assisting the customer in completing these forms and assist in locating serial numbers. Requesting that the customer read all warranty information when possible and explaining any provision not clearly understood.
  - Instructing the customer on how to get local and out-of-town service on the fifth wheel and its separately warranted components whether in or out of warranty.

## **REPORTING SAFETY DEFECTS**

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As a new fifth wheel owner you are responsible for regular and proper maintenance. This will help to prevent conditions arising from neglect that are not covered by your Holiday Rambler Limited Warranty. Maintenance services should be performed in accordance with this owner's manual, and any other applicable manuals. As the owner it is your responsibility and obligation to return your fifth wheel to an authorized dealer for repairs and service (see Limited Warranty). Since the authorized dealer where you purchased the fifth wheel is responsible for its proper servicing before delivery, and has an interest in your continued satisfaction, we recommend that inspection, warranty and maintenance services be performed by the dealership. We suggest that you take your fifth wheel on a weekend shake down before leaving on an extended trip.

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In addition to this owner's manual, you will find a Warranty Information File in the fifth wheel. This file contains valuable documents about your fifth wheel systems and equipment. Be sure you read and understand all the information in this file to help you safely operate, maintain and troubleshoot those items.

Give thought to the appointment time. Know when to take the fifth wheel in for service. Monday and Friday are busy days for most dealers. Therefore, it makes sense to make a midweek appointment whenever possible.

## **TAKING DELIVERY**

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If you're having warranty work done, be sure to have your warranty registration papers with you. All work to be performed may not be covered by warranty; be sure to discuss additional charges with the service manager. Keep a maintenance log of the fifth wheel service history. This can often provide a clue to current problems.

### *Dealer Responsibility*

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Make a written list of specific repairs and work needed. Be ready to discuss the list with the service manager or representative. This will ensure a clear understanding of warranty and service work to be done. This is important to expedite any authorizations that may be needed to complete your repairs.

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Don't leave a list of 20 items to be serviced and expect to have the fifth wheel back by five o'clock. If you list a number of items, and you must have the fifth wheel back in a days time, discuss the situation with your service manager and list items in order of priority. Expect to make a second appointment for work not completed or for parts that may need to be ordered.

### *Customer Responsibility*

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Please don't be offended when you are told you cannot watch work being done. Insurance requirements forbid admission of customers to a service area.

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Check out service or repair performed when you pick up your fifth wheel and notify the service manager of any dissatisfaction. If circumstances prevent returning the fifth wheel for immediate corrective work, make an appointment as soon as possible.

## **WARRANTY INFORMATION FILE**

**FOR YOUR OWN REFERENCE**

**OWNER'S RECORD - SERIAL NUMBERS**

Serial Number \_\_\_\_\_

Federal Vehicle Identification Number \_\_\_\_\_

Door Key Number \_\_\_\_\_

Range Model & Serial Number \_\_\_\_\_  
(Located under top burner plate)

Microwave Model & Serial Number \_\_\_\_\_  
(Located behind door on case)

Refrigerator Model & Serial Number \_\_\_\_\_  
(Located inside refrigerator compartment)

Furnace Model & Serial Number \_\_\_\_\_  
(Located in outside compartment on furnace)

Water Heater Model & Serial Number \_\_\_\_\_  
(Located in outside compartment on water heater)

Roof Air Conditioner \_\_\_\_\_  
(Located under top cover on air conditioner)

Model & Serial Numbers of Optional Equipment \_\_\_\_\_

When writing to Consumer Affairs Department, or to a component manufacturer, be sure to include your fifth wheel serial number and any other pertinent numbers listed above.

**Holiday Rambler Consumer Affairs Department  
606 Nelson's Parkway  
Wakarusa, Indiana 46573  
800-522-7519 or 877-466-6226**

**FOR YOUR OWN REFERENCE**

**OWNER'S RECORD - PERSONAL PROPERTY**

Item	Serial Number	Value

**OWNER'S RECORD - INSURANCE**

Company \_\_\_\_\_  
Policy Number \_\_\_\_\_  
Agent's Name & Address \_\_\_\_\_  
Business Phone \_\_\_\_\_  
Emergency Phone \_\_\_\_\_  
Renewal Date(s) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VENDOR LIST**

**AIR CONDITIONER**

Dometic Corp.  
219-463-7712

**ATTIC FAN**

Fan-Tastic Vent  
800-521-0298

**AWNINGS**

Carefree of Colorado  
303-469-3324

**AXLE**

Dexter Axle  
219-295-1900

**FIRE EXTINGUISHER**

The Fire Extinguisher Co.  
919-563-5911

**FURNACE**

Atwood Mobile Products  
801-972-4621

**LIGHTS**

The Bargman Company  
219-665-6970

**LP-GAS REGULATOR**

Marshall Brass  
616-781-3901

**MICROWAVE**

Sharp Electronics Corp.  
800-447-4700

**MONITOR PANEL**

Ventline  
219-848-4491

**POWER CONVERTER**

Progressive Dynamics  
616-781-7802

**RANGE**

Atwood Mobile Products  
219-262-2655

**RANGE HOOD**

Ventline  
219-848-4491

**REFRIGERATOR**

Norcold  
800-543-1219

**ROOF VENT**

Ventline  
219-848-4491

**SMOKE DETECTOR**

Bob Gunn Associates  
616-467-8705

**TELEVISION ANTENNA**

Antenna Tek, Inc.  
800-772-9591

**THERMOSTAT**

The Dometic Corp.  
219-293-8525

**TIRES**

Wheel Tech North  
America, Inc.  
219-293-8525

**TOILET**

Thetford Corp.  
313-769-2023

**WATER FILTER**

Hydro Life, Inc.  
800-626-7130

**WATER HEATER**

Atwood Mobile Products  
219-262-2655

**WATER PUMP**

Shurflo  
800-762-8094

**WINDOW - EXIT**

Excel Industries  
219-264-2131

HOLIDAY RAMBLER  
606 Nelson's Parkway  
Wakarusa, Indiana 46573  
Telephone 800-522-7519 or 877-466-6226

**2001 Model Year  
TOWABLE LIMITED WARRANTY**

**WHAT THE PERIOD OF COVERAGE IS:** If you use your Holiday Rambler® towable product only for recreational travel and family camping purposes, the Limited Warranty provided by Holiday Rambler ("Warrantor") covers your new towable product when sold by an authorized dealer, for twelve (12) months from the original retail purchase date. However, the Limited Warranty provided by Warrantor covers the Alumaframe® structure of the sidewalls (excluding slide outs), roof, and rear and front walls for sixty (60) months from the original retail purchase date.

If you use your towable product for any rental or commercial purposes whatsoever, the Limited Warranty provided by Warrantor covers your new towable product when sold by an authorized dealer for ninety (90) days from the original retail purchase date. In addition, the Limited Warranty provided by Warrantor covers the Alumaframe® structure of the sidewalls (excluding slide outs), roof and rear and front walls for twelve (12) months from the original purchase date. A conclusive presumption that your towable product has been used for commercial purposes arises if you have filed a federal or state tax form claiming any business tax benefit related to your ownership of the towable product.

The above Limited Warranty coverage applies to all owners, including subsequent owners, of the towable product. However, a subsequent owner must submit a warranty transfer form by filing the form through an authorized Holiday Rambler dealer. A subsequent owner's warranty coverage period is the remaining balance of the warranty coverage period the prior owner was entitled to under this Limited Warranty. Warranty transfer forms can be obtained by contacting the Consumer Affairs Department. There is no charge for the transfer.

**LIMITATION OF IMPLIED WARRANTIES: ANY IMPLIED WARRANTIES ARISING BY WAY OF STATE LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE TERM OF THIS LIMITED WARRANTY AND ARE LIMITED IN SCOPE OF COVERAGE TO THOSE PORTIONS OF THE TOWABLE PRODUCT COVERED BY THIS LIMITED WARRANTY.** There is no warranty of any nature made by Warrantor beyond that contained in this Limited Warranty. No person has authority to enlarge, amend or modify this Limited Warranty. The dealer is not the Warrantor's agent but is an independent entity. Warrantor is not responsible for any undertaking, representation or warranty made by any dealer or other person beyond those expressly set forth in this Limited Warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

**WHAT THE WARRANTY COVERS:** Warrantor's Limited Warranty covers defects in the manufacture of your towable product and defects in materials used to manufacture your towable product. Also see the section "What the Warranty Does Not Cover" set below.

## ***Information & Warranty***

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**WHAT WE WILL DO TO CORRECT PROBLEMS:** Warrantor will repair and/or replace, at its option, any covered defect if: (1) you notify Warrantor or one of its authorized servicing dealers of the defect within the warranty coverage period and within five (5) days of discovering the defect; and (2) you deliver your Towable product to Warrantor or Warrantor's authorized servicing dealer at your cost and expense.

Warrantor may use new and/or remanufactured parts and/or components of substantially equal quality to complete any repair.

Defects and/or damage to interior and exterior surfaces, trim, upholstery and other appearance items may occur at the factory during manufacture. Normally, any factory defect or damage is detected and corrected at the factory during the inspection process performed by the Warrantor. If, however, you discover any such defect or damage when you take delivery of the towable product, you must notify your dealer or Warrantor within five days of the date of purchase to have repairs performed to the defect at no cost to you as provided by this Limited Warranty.

If two or more unsuccessful repair attempts have been made to correct any covered defect that you believe substantially impairs the value, use or safety of your towable product, you must, to the extent permitted by law, notify Warrantor directly in writing of the failure to successfully repair the defect so that Warrantor can become directly involved in performing a successful repair to the identified defect.

**HOW TO GET SERVICE:** The Warranty Registration form must be returned to Warrantor promptly upon purchase to assure proper part replacement or repair and to activate your Limited Warranty. For warranty service simply contact one of Warrantor's authorized service centers for an appointment, then deliver your towable product (at your expense) to the service center. If you need assistance in locating an authorized warranty service facility, contact Warrantor's Warranty Department (1-877-466-6226). The mailing address is P.O. Box 465, Wakarusa, Indiana 46573.

Because Warrantor does not control the scheduling of service work by its authorized servicing dealers, you may encounter some delay in scheduling and/or in the completion of the repairs.

**WHAT THE WARRANTY DOES NOT COVER:** This Limited Warranty does not cover: any towable product sold or registered outside of the United States or Canada; items which are added or changed after the towable product leaves Warrantor's possession; items that are working as designed but which you are unhappy with because of the design; normal wear and usage, such as fading or discoloration of fabrics, or the effects of condensation inside the towable product; defacing, scratching, dents and chips on any surface or fabric of the towable product, not caused by Warrantor; routine maintenance, including by way of example wheel alignments; appliances and components covered by their own manufacturer's warranty including, by way of example the tires, batteries, microwave, refrigerator, ice maker, stove, oven, generator, VCR, television(s), water heater, furnace, stereo, radio, compact disc player, washer, dryer, inverter and cellular phone; or flaking, peeling and chips or other defects or damage in or to the exterior or finish caused by rocks or other road hazards, the environment including airborne pollutants, salt, tree sap and hail.



**EVENTS DISCHARGING WARRANTOR FROM OBLIGATION UNDER WARRANTY:**

Misuse or neglect, accidents, unauthorized alteration, failure to provide reasonable and necessary maintenance (See Owner's Manual), damage caused by off road use, collision, fire, theft, vandalism, explosions, and overloading shall discharge Warrantor from any express or implied warranty obligation to repair any resulting defect.

**DISCLAIMER OF CONSEQUENTIAL AND INCIDENTAL DAMAGES: THE ORIGINAL PURCHASER OF THE TOWABLE PRODUCT AND ANY PERSON TO WHOM THE TOWABLE PRODUCT IS TRANSFERRED, AND ANY PERSON WHO IS AN INTENDED OR UNINTENDED USER OR BENEFICIARY OF THE TOWABLE PRODUCT, SHALL NOT BE ENTITLED TO RECOVER FROM WARRANTOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECT IN THE TOWABLE PRODUCT.**

Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above exclusions may not apply to you.

**LEGAL REMEDIES: ANY ACTION TO ENFORCE THIS EXPRESS OR ANY IMPLIED WARRANTY SHALL NOT BE COMMENCED MORE THAN ONE (1) YEAR AFTER THE EXPIRATION OF THIS WARRANTY.** Some states do not allow the reduction in the statute of limitations, so the above reduction may not apply to you.

**THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.**



# **A** LUMASCAPE

## FIFTH WHEEL

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## INTRODUCTION

Towing your new fifth wheel may be an unfamiliar experience. Use extra caution until you feel comfortable. With older trucks, a rule of choosing gears was to use the same gear going downhill that you would need to climb uphill. However, new trucks have lower friction parts and streamlined shapes for fuel economy. They may also have more powerful engines. This means they can go uphill in higher gears, with less friction and air drag to hold them back going downhill. Find out what gears are right for your vehicle. There should be little difficulty on gradual turns. For sharp turns, reduce speed and wing wide after considering other traffic and obstacles in the intersection; do not be afraid to pull well into the intersection before making a turn. Proper braking is extremely important for your safety. Total weight towed is much greater than a car, or even a small truck. Anticipate traffic signals, stop signs and side traffic. Decelerate slowly, whenever possible, to prevent undue wear on brakes, tires, etc. When passing a semi, or bus or other large vehicle from either direction, air turbulence may cause the fifth wheel to sway slightly. When this happens, a slight acceleration and/or application of the brakes may help stabilize the sway. Improper use of a recreational vehicle may cause physical damage and/or personal injury to the vehicle operator, occupants and others in the vicinity. When using your recreational vehicle always follow proper procedures. When towing a fifth wheel always use caution and follow the above guidelines. Whenever uncertain, it is always a good idea to request additional instructions or advice. Other precautions include:

- Never exceed posted speed limit; reduce speed when required by weather, traffic or road conditions.
- Use extreme caution when going downhill. Excessive speed may cause loss of control.
- Never attempt to pass on a curve or anywhere your view of the road ahead is restricted.
- Always check fifth wheel brakes, lights and breakaway switch before starting out on any long trip. Check to be certain brakes are being applied evenly. Uneven braking will pull the fifth wheel to one side, which may cause a loss of control when towing.
- Know and observe laws where you are traveling; they may vary from state to state.

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It is important that your fifth wheel is matched with an appropriate tow vehicle. A tow vehicle with an inadequate gross combined weight rating (GCWR) may experience mechanical failures and may not provide adequate towing stability. Consult your dealer for help in selecting your vehicle hitch and related hitching accessories. Towing the fifth wheel with an inadequate tow vehicle can cause premature wear, fractures and/or breaks in the fifth wheel frame.

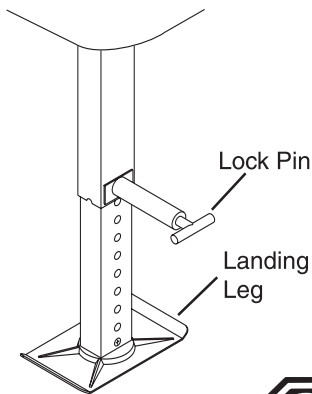
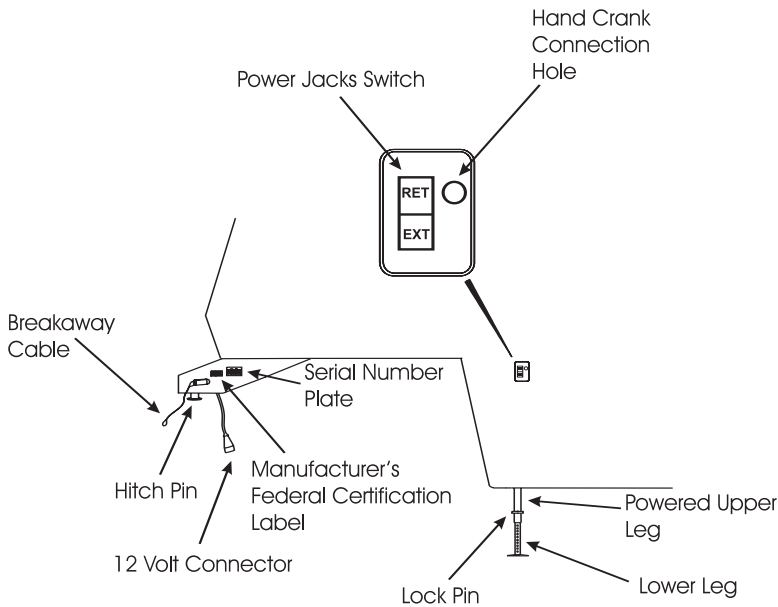
## TOW VEHICLE

# HITCHING FIFTH WHEEL

Back up and align the tow vehicle hitch with the fifth wheel hitch pin, stopping so that the hitches are approximately 2 feet apart. Push the front power jacks switch, or use the hand crank, to raise the front fifth wheel

hitch pin so that it clears the vehicle hitch. Back up the tow vehicle to align the vehicle hitch and the fifth wheel hitch pin. Lower the fifth wheel hitch to engage the hitches and lock them in place. Raise the fifth wheel front power jack legs off the ground slightly, pull out the leg lock pins, raise the lower legs all the way up and secure them in the powered upper legs with the lock pins. Raise the front power jacks all the way up. Hook up the breakaway switch cable loop and place on tow vehicle that is part of the hitch assembly.

The other end of cable must be plugged into the switch located on top of the fifth wheel hitch box. Test the switch periodically (see Breakaway Switch). Plug in the tow vehicle 12 Volt electrical connector to fifth wheel connector.



plugged into the switch located on top of the fifth wheel hitch box. Test the switch periodically (see Breakaway Switch). Plug in the tow vehicle 12 Volt electrical connector to fifth wheel connector.

Install and adjust the rearview mirrors. Check the lighting system on the tow vehicle and fifth wheel: running light, tail lights, stop lights, and directional lights. Check inside the fifth wheel to make sure vents, windows and doors are closed. Check for load equalization.



**CAUTION: Always check to be certain the hitch is locked properly and the breakaway switch cable is secured before towing.**

## Maintenance

Maintenance for the fifth wheel hitch is neither complicated nor difficult. A lubrication point of major importance is the contact area where the pinbox plate rests on the hitch saddle. A liberal quantity of grease is often used on this surface, but that can be messy and there are cleaner ways to accomplish the same lubrication objective. After market lubrication pads are available, which can be attached to the pinbox plate to eliminate the need for grease. Typical of this type of lubrication pad is a thin sheet of graphite impregnated Teflon that is riveted to the pinbox plate. Of course, when using lubrication pads, you should make it a matter of routine maintenance to inspect for pad wear.

Before and after each trip, all nuts, bolts, safety pins and other hitch related hardware should be inspected to ensure the integrity of the hitch. On a routine schedule, check under the cargo box to make sure the hitch attachment to the frame is still intact.

1. Inspect the platform bolts and the kingpin box mounting bolts at least every 2000 miles. Using a torque wrench, tighten platform mounting bolts to 50 to 55 foot-pounds, and kingpin box bolts to 150 foot-pounds.
2. Inspect the kingpin latch plate and the latch bolt making sure they operate freely.
3. Inspect the kingpin, pin-box plate and saddle to make sure there is no evidence of excessive wear or damage.
4. Lubricate the latch bolt and pivot point of the latch plate with SAE 30 oil at least every six months.
5. Grease the load-bearing surfaces of the fifth wheel hitch with a lithium base grease every 2,000 miles of operation to reduce wear and provide easier turning. As an alternative, use a grease-free lubrication pad between the hitch saddle and the pinbox plate.
6. Inspect and clean the hitch latch plate before each use.
7. Grease the pivot points between the rails and hitch with lithium-base grease every 2,000 miles of operation.
8. Replace all worn or damaged parts.

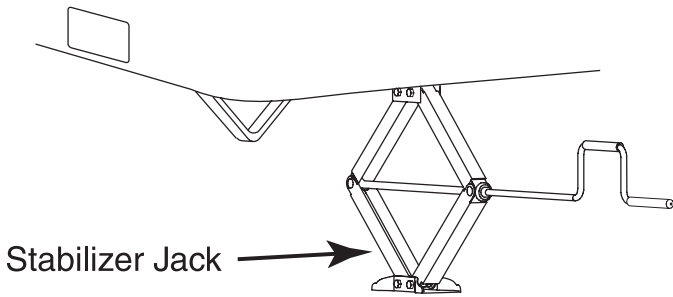
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If your destination does not have drive through sites, pick a good level site and back in carefully. We suggest that you stop near the site, get out of the vehicle and observe the surrounding area. Check for low-hanging tree limbs, posts, large rocks or other obstacles. Try to choose a site that is on the driver's side so you can see what the rear of the fifth wheel is doing. With the site on the passenger side you would be backing on your blind side, which is more difficult even with side mirrors as a guide. When the site conditions are satisfactory, maneuver the vehicle and fifth wheel into a position for backing in the site space. Back up the vehicle and fifth wheel slowly, using the side mirrors as a guide; or have another person outside guide you until the fifth wheel is in the desired position.

## **BACKING IN**

**PARKING**

Put the tow vehicle in park or set the foot brake. Turn off the tow vehicle ignition switch. Block all wheels securely. Unhook the 12 Volt connector and the breakaway switch cable from the tow vehicle. Pull out the left and right front power jack leg locking pins and allow the legs to rest on the ground. Pick up the legs and secure them with the lock pins into the first available set of holes in the leg. Activate the power jack switch, or use the hand crank, to raise the front fifth wheel hitch to relieve the hitch pressure. Release the hitch latch and raise the fifth wheel hitch to clear the vehicle hitch. Move the tow vehicle away from the fifth wheel. Adjust the fifth wheel front jacks to level the fifth wheel front to rear. Lower the rear stabilizing jacks by turning the cranks until they contact the ground firmly. Place wooden blocks under the pads if necessary. Do not use the stabilizing jacks for

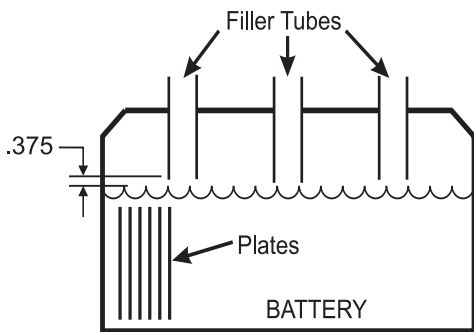


leveling on uneven ground or to change tires. Connect the 120 Volt AC power. Open the LP gas valves at the LP tanks. Connect the fresh water supply and the water systems if necessary. Connect the waste drain hose to the sewer hookup. If applicable, start the refrigerator, water heater and furnace on gas.

**DRY CAMPING TIPS**

For extended dry camping, management of all your resources is essential. All travel trailers have large batteries and plenty of water and holding tank capacity. With a little care and forethought it is possible to go quite a long way with only the wonderful amenities you bring with you.

Conserve water! Your fifth wheel holds a lot, but it goes down the drain fast if you let it. Don't waste water you don't actually use. Use the manual valve on the shower head and turn the water off and on as needed while showering. You can reduce water needed for a shower by as much as two-thirds. Do not let the water run in the sink while you do other things, such as wiping up the kitchen or brushing your teeth.



Battery State of Charge	Spec. Gravity	Voltage
100%	1.265	12.7
75%	1.225	12.4
50%	1.190	12.2
25%	1.155	12.0
Discharged	1.120	11.9 or Less

*The distilled water level in battery should be 1/8" below the vent tube.*

Charge the batteries when they are half down. At half charge the battery voltage will be 12.2 V. Use a hydrometer for testing. Never use batteries until they are totally dead: when lights "dim-out." Each time this happens, the batteries ability to recharge to full capacity is diminished. This damage is cumulative and will eventually render a battery useless.



Solar panels can greatly increase the time you can operate between battery charges. Remember one solar panel is just break even for parasitic loads. A pair of five amp panels, combined with very careful husbanding of battery usage in sunny weather, might actually allow the sun to replace what you use each day!

Remember that everyone has different habits and expectations. The general guidelines below will provide a useful starting point for building your own schedule and regimen for extended stays where power and water are not available. You too can become less dependent on hookups.

- Make sure to turn all appliances to propane.
- The battery cutoff switch will need to be left on.
- You may want to buy extra solar panels.
- You may want to add an extra battery.
- Get to know your batteries.
- One continuous duty solenoid is 0.7 amp draw.
- A 13" TV has a 1.7 amp draw.
- A porch light has 2.0 amp draw.

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Ground fault circuitry is used in two applications. One is a type of circuit breaker used in the 120 Volt AC breaker panel. The other is found incorporated in an outlet. When a circuit breaker or outlet with ground fault circuitry is properly installed it provides overload and short circuit protection for branch circuit wiring, PLUS protection for people against hazardous ground fault electrical current which can cause loss of life.

**GFCI**  
*Ground Fault Circuit  
Interrupter Outlet*

Ground fault currents are currents which flow from the power terminal and return on a path through a person to ground. For example, touching a faulty appliance while standing on or contacting an electrical ground such as a water fixture, bathtub or earth.

When a circuit breaker or outlet with ground fault circuitry trips it can indicate an overload, short or ground fault of that circuit. This can be caused by faulty insulation, wet wiring from inside an appliance or equipment connected to the circuit. Immediately request an electrician to correct the problem.



**CAUTION: If the GFCI breaker continues to trip there is a loss in protection and a potentially dangerous condition. Have the system repaired by a qualified technician. Do not continue to reset breaker or outlet until the problem has been identified and corrected.**

The “GFCI” outlet, or breaker, is two devices in one. It protects against ground faults and is a circuit breaker for over current protection. The “ground fault” portion uses sensitive electronics inside the outlet or breaker to detect current leaving the outlet or breaker and returning on the ground safety wire. Example: Normal current flow we think of as power is going to the “HOT” or black wire through the load (light bulb or appliance) and coming back on the “COMMON” or neutral wire. If just a small amount of current comes back on the safety ground wire the electronics will trip the breaker or outlet, stopping the flow of electricity. The amount of current it takes to “trip” a breaker or outlet from a ground fault varies from different manufacturers, approximately 30 mils\* or less. The circuit breaker or outlet with ground fault circuitry provides protection only on the circuit to which it is connected. An electrical shock resulting from a ground fault can be felt, but such a shock will be considerably less than that of an unprotected circuit. People with heart problems or other conditions that make them susceptible to electrical shocks can be seriously injured.

The GFCI type outlet is also a breaker for over-current or short circuit protection. The GFCI outlet or breaker will not protect you from the normal current flow. Example: Touching both metal prongs of an electrical cord while plugging it in.



**NOTE: The ground fault outlet or breaker should be tested once a month to ensure it is working properly. Use the “TEST” button on the outlet or breaker, it should trip with an audible “click”. The breaker or outlet will not trip if A/C power is not present. If power is present and the device will not “trip,” replace it with the same type and amperage rating before using that circuit.**



**NOTE: \*One mil is equal to 1/1000 of one amp**

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## LANDING LEGS

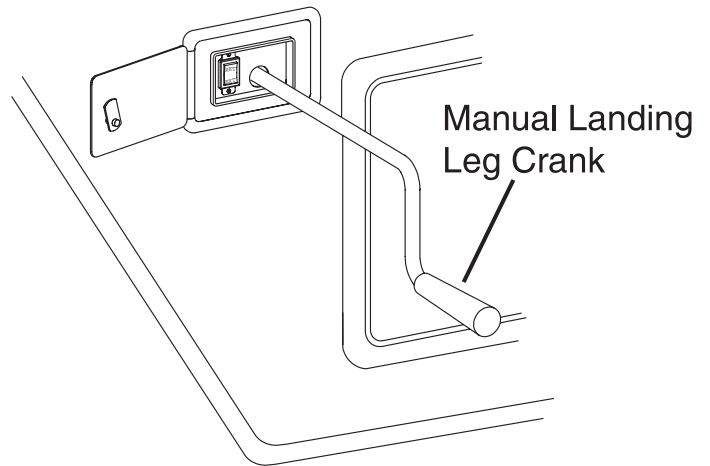
### Operation

1. To lift the fifth wheel for coupling or uncoupling, lower the drop tube by releasing the lock pin. Re-pin in the hole that places the foot pad nearest to the ground to compensate for variations in the terrain between the legs.
2. To raise and lower the fifth wheel landing legs, refer to Manual Operation or Electric Motor Operation.

To lower the landing legs, insert the handle into the alignment tube until the end engages the crank shaft. Turn the handle counterclockwise to raise the fifth wheel. Do not retract the legs past the STOP label. Remove and store the handle.

*Manual Operation*

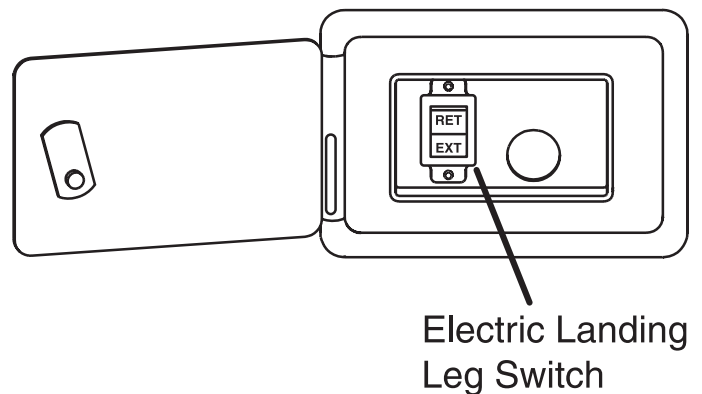
To raise the landing legs, rotate the handle clockwise. Retract as far as possible with the handle. Release the lock pin and raise the drop tube, repinning it in the highest possible position. Remove and store the handle.



To lower landing legs, push the switch to the Extend position and hold until the landing legs raise the fifth wheel to the desired height. Extend and retract indicate the travel direction of the legs, not the fifth wheel.

*Electric Motor Operation*

To raise the landing legs, push the switch to the retract position and hold until the legs are fully retracted. Release the toggle switch (as the clevis pin in the inner ram tube nears the end of the outside tube) to avoid unnecessary wear on the motor clutch. Release the lock pin and raise the drop tube, repinning it in the highest possible position.



**NOTE:** The landing legs may be operated with the handle if the electric drive motor is inoperative, or if electricity is unavailable.



**WARNING:** The handle could cause injury. Remove the handle before using the electric motor. The handle may jerk, causing injury. Before towing check for maximum clearance between the ground and the bottom of the landing gear.

### Maintenance

1. Before each use:  
Inspect the drop tube and the inner ram tube, replacing if they are bent or damaged.
2. Annually:  
Extend the landing legs as far as possible, clean the drop tube and the inner ram tube. COAT the exposed surface of tubes with a silicone spray lubricant.  
COAT the inside of the handle alignment tube with a silicone spray lubricant.  
OIL the shaft bushing in gear box and leg gear heads with SAE 30 oil.  
Lubricate the gears in the gear box and the landing leg gear heads with extreme pressure grease.
3. Twice each year for the Electric Drive Motor Landing Legs:  
Check the wiring connections at the battery.  
Clean the terminals with a solution of baking soda and water.  
Cover the terminals with a thin coat of grease.



**NOTE: The Electric Drive Motor is lubricated at the factory and requires no further lubrication.**

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## TIRES WHEELS

Your fifth wheel comes with heavy-duty wheels. When buying additional wheels get the same type as those installed on your trailer, available from your authorized dealer. Check the wheel lug bolts before every trip. Tighten the lug bolts to 90-120 foot/pounds.

Your fifth wheel is equipped with tires rated for highway speed at the GVWR. Inflate to recommended cold tire pressure printed on manufacturer's federal certification label located on outside front left of trailer. Check tire pressures often when traveling, always check when tires are cool. Do not overload the trailer. The tires are covered by the tire manufacturer's warranty. If you have a defective tire, refer to the applicable warranty and go directly to the nearest dealer for adjustment. Never discard a defective tire, return tire to the dealer for inspection.

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### Wheel Mounting

1. After demounting old wheel, remove all dirt, rust, grease and oil from stud threads. Do not lubricate threads.
2. Position wheel on fifth wheel. Inspect to insure full contact between the mounting surface (seat pads) of wheel and mounting surface of hub and brake drum.
3. Start wheel nuts on stud.
4. Finger tighten top nut. Rotate wheel so that the number two nut is at top and finger tighten. Finger tighten remaining nuts in numerical

- (crisscross) order; always tighten nuts in top position.
5. Repeat Step 4, rotating wheel and finger tightening nuts until all nuts are snug.
  6. Tighten nuts as describe under “wheel torque requirement” section in this manual.
  7. After wheels (with tires) have been mounted, visually inspect to insure non-interference with body or other component parts. Be sure to inspect wheels in all possible positions (extreme turn, etc.).
  8. Only specially trained persons using proper equipment shall mount or demount pneumatic tires. Serious or fatal injuries can result from using improper mounting procedures.



**NOTE: Check the fit of your lug wrench. An oversize wrench results in mutilated lug nuts.**



**WARNING: Maintain proper torque on lug nuts or wheel bolts. Failure to do so may result in serious injury or property damage.**

**Wheel Torque Requirements:**

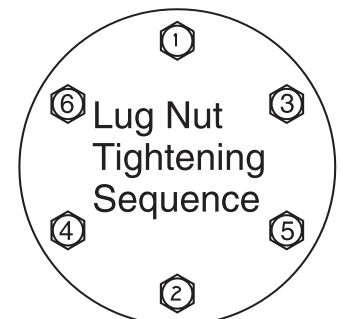
It is extremely important to apply and maintain proper wheel mounting torque on your fifth wheel axle. Torque is a measure of the amount of tightening applied to a fastener (nut or bolt) and is expressed as length times force. For example, a force of 90 pounds applied at the end of wrench one foot long will yield 90 lbs ft of torque. Torque wrenches are the best method to assure the proper amount of torque is being applied to a fastener.



**NOTE: Wheel nuts or bolts must be applied and maintained at the proper torque levels to prevent loose wheels, broken studs and possible dangerous separation of wheels from your axle.**

Be sure to use only the fastener matched to the cone angle of your wheel (usually 60° or 90°). The proper procedure for attaching your wheels is as follows:

- Start all bolts or nuts by hand to prevent cross threading.
- Tightening of the fastener should be done in stages.
- Following the recommended sequence, tighten fastener per wheel torque chart.
- Wheel nuts/bolts should be torqued before first road use and after each wheel removal. Check and retorque after the first 10 miles, 25 miles and again at 50 miles. Check periodically thereafter.



Torque Sequence			
Wheel Size	1st Stage	2nd Stage	3rd Stage
12"	20-25	35-40	50-75
13"	20-25	35-40	50-75
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120

## TIRE PRESSURES

The most common cause of fifth wheel tire trouble is underinflation. It is important to always maintain full air pressure, as indicated by the tire manufacturer (printed on the tires sidewalls or on the fifth wheel manufacturers certification label). Most tire manufacturers have the air pressure molded on the tire sidewall.

Pressure should be checked cold before operation. Do not bleed air from tires when tires are hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear.



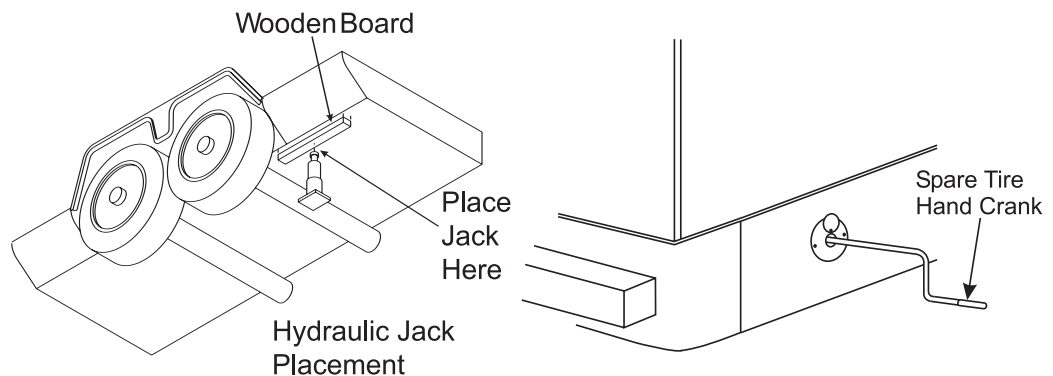
**NOTE: Tire wear should be checked frequently because once a wear pattern becomes firmly established in a tire it is difficult to stop, even if the underlying cause is corrected.**



**WARNING: Keep tires properly inflated. Failure to maintain correct pressure may result in tire failure and loss of control resulting in serious injury or property damage.**

## TIRE CHANGING

It is desirable that you carry a jack that is compatible with your fifth wheel, in the event that you have a flat tire. A small board or block can also be beneficial in the event you are jacking on soft dirt or hot asphalt. The jack (depending on style) may be placed under the side frame in back of the wheel or off to one side. If you have a defective tire, refer to the appli-



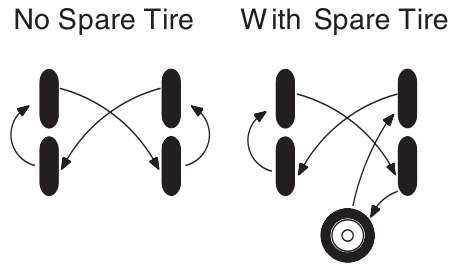
cable warranty and go directly to the nearest dealer for adjustment. Never discard a defective tire, return the tire to a dealer for inspection. A jack and lug wrench are not supplied with this fifth wheel.

It is recommended that you rotate tires every 5,000 miles. Refer to tire rotation illustration for proper rotation sequence.

**TIRE ROTATION**

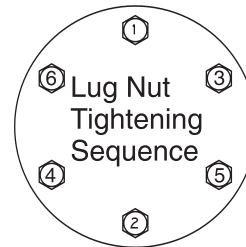
**Axle Alignment:**

Axles are aligned at the factory. The alignment can be affected by road conditions. If you notice unusual tire wear have the alignment inspected. A large frame or truck shop is equipped to handle the alignment on fifth wheel. Only a cold bend method should be used to re-align the axles.



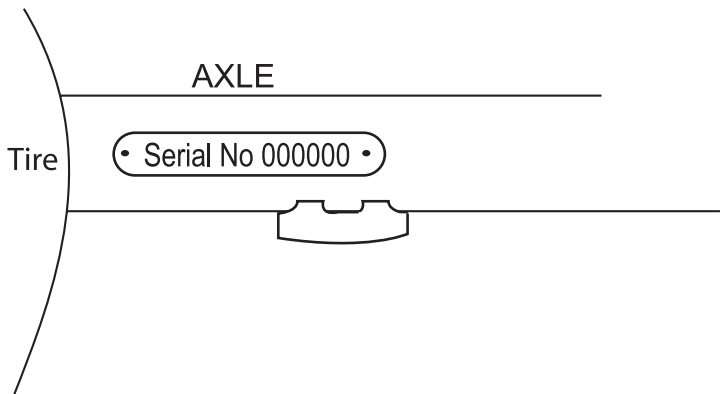
**Wheel Bearing Lubrication:**

Wheel bearings should be repacked every 10,000 miles or at least every 12 months, whichever occurs first. Use automotive-type bearing grease.



**Axle, Hub or Brake Service:**

Consult your dealer for service. When asking for information or ordering replacement parts provide the identification number from ID tag attached to the axle on most models.



The electric brakes on the fifth wheel are similar to the drum brakes on your automobile. The basic difference is that automotive brakes are actuated by hydraulic pressure while electric fifth wheel brakes are actuated by an electromagnet. With all of the brake components connected into the system the brake will operate as follows:

**BRAKES**

When the electrical current is fed into the system by the controller it flows through the electromagnets in the brakes. The high capacity electromagnets are energized and attracted to the rotating armature surface of the drums which moves the actuating levers in the direction that the drums are turning.

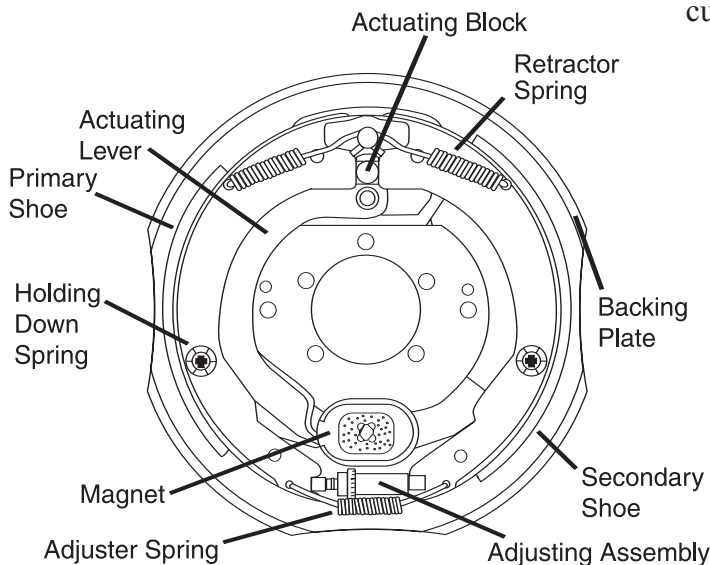
The resulting force causes the actuating cam block at the shoe end of the lever to push the primary shoe out against the inside surface of the brake drum. The force generated by the primary shoe acting through the adjuster link then moves the secondary shoe out into contact with the brake drum.

Increasing the current flow to the electromagnets causes the magnet to trip the armature surface of the brake drum more firmly. This results in increasing the pressure against the shoes and brake drums until the desired stop is accomplished.

### *Electric Brakes, How to use properly*

Fifth wheel brakes are designed to work in synchronization with tow vehicle brakes. Never use tow vehicle or fifth wheel brakes alone to stop the combined load.

The fifth wheel and tow vehicle will seldom have the correct amperage flow to the brake magnets to give comfortable, safe braking unless proper brake system adjustments are made. Changing the fifth wheel load and driving conditions, as well as uneven alternator and battery output, can mean unstable current flow to brake magnets. It is imperative to maintain and adjust brakes as set forth in the manual. Use a properly modulated brake controller and perform the synchronization procedure noted below.



In addition to the synchronization adjustments detailed below, electric brake controllers provide a modulation function that varies the current to the electric brakes with the pressure on the brake pedal or amount of deceleration of the tow vehicle. It is important that the brake control provide approximately 2 Volts to the braking system when the brake pedal is first depressed and gradually increases the voltage to 12 Volts as brake pedal pressure is increased. If the controller “jumps” immediately to high voltage output, even during a gradual stop, the electric brakes will always be fully energized and will result in harsh brakes and potential wheel lockup.



Proper synchronization of tow vehicle to fifth wheel braking can only be accomplished by road testing. Brake lockup, grabbing or harshness is quite often due to the lack of synchronization between the tow vehicle and the fifth wheel being towed, too high of a threshold voltage (over 2 Volts) or under adjusted brakes.

Before any synchronization adjustments are made, fifth wheel brakes should be burnished-in by applying the brakes 20-30 times with approximately a 20 m.p.h. decrease in speed, e.g. 40 m.p.h. to 20 m.p.h. Allow ample time for brakes to cool between application. This allows the brake shoes and magnets to slightly “wear-in” to the drum surfaces.

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To insure safe brake performance and synchronization, completely read the brake controller manufacturer’s instructions before attempting any synchronization procedure.

*To Synchronize*



**CAUTION: Before making road tests, make sure the area is clear of vehicular and pedestrian traffic.**

Make several hard stops from 20 m.p.h. on a dry paved road, free of sand and gravel. If the fifth wheel brakes lock immediately, decrease the gain setting on the controller. If they do not approach progressive lock up slightly increase the gain setting.



**NOTE: Minimum vehicle stopping distances are achieved when wheels approach lock up. Brake lock up should be avoided as it results in poor vehicle stability and control. Depending on load, brake type, wheels and tires, not all fifth wheel brakes are capable of wheel lockup.**

If the controller is applying the fifth wheel brakes before the tow vehicle brakes, the controller level adjustment should be adjusted so the fifth wheel brakes come on in synchronization with the tow vehicle brakes. For proper braking performance it is recommended that the controller be adjusted to allow the fifth wheel brakes to come on just slightly ahead of the tow vehicle brakes. When proper synchronization is achieved there will be no sensation on the fifth wheel “jerking” or “pushing” the tow vehicle during braking.



**CAUTION: Do not adjust this control outside the parameters outlined by the brake controller manufacturer's instructions.**

### Controllers

Start by making sure the fifth wheel brakes are properly adjusted. Some controllers have a gain control to vary the amount of current to the brakes and a level control which sets the controller's inertia sensor to sense deceleration. The level adjustment also can be used to vary when the fifth wheel braking is felt. The gain or output control adjustment usually controls the maximum amount of amperage available to the brakes. This can be adjusted for varying fifth wheel loads.

### General Maintenance

#### **Brake Adjustment:**

Brakes should be adjusted (1) after the first 200 miles of operation when the brakes shoes and drums have "seated," (2) at 3000 mile intervals, (3) as use performance requires. The brake should be adjusted in the following manner:

1. Jack up fifth wheel and secure on adequate capacity jack stands. Follow recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.
2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the lining against the drum makes the wheel difficult to turn.
4. Rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the heel to the ground.
6. Repeat the above procedure on all brakes.



**CAUTION: Never crawl under your fifth wheel unless it is resting on properly placed jack stands.**

#### **Brake Cleaning and Inspection:**

Your fifth wheel brakes must be inspected and serviced at yearly intervals, or more often as use and performance requires. Magnets and shoes must be changed when they become worn or scored, thereby preventing adequate vehicle braking.

Clean the backing plate, magnet arm, magnet and brake shoes. Make certain that all the parts removed and replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe

return springs, hold down springs and adjuster springs for stretch or deformation. Replace if required.



**CAUTION: ASBESTOS DUST HAZARD!** Some brake shoe friction materials contain asbestos. Certain precautions need to be taken when servicing brakes:

1. Avoid creating or breathing dust.
2. Avoid machining, filling or grinding the brake lining.
3. Do not use compressed air or dry brushing for cleaning. (Dust can be removed with a damp brush).

**Brake Lubrication:**

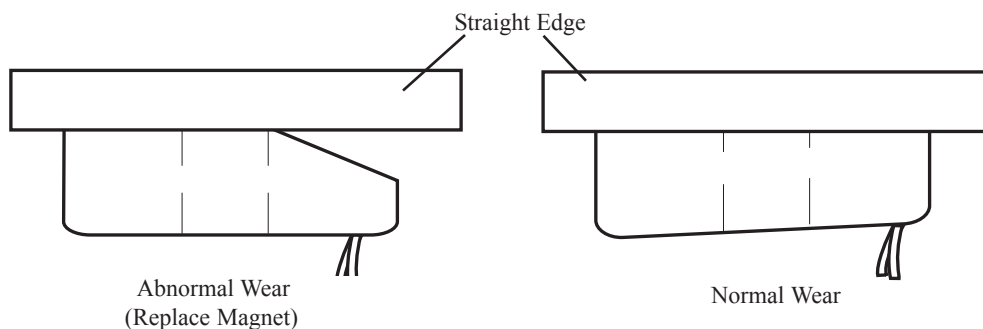
Before reassembling apply a light film of Lubriplate (or similar grease), or anti-seize compound on the brake anchor pin, the actuating arm bushing and pin and the areas on the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.



**CAUTION: Do not get grease or oil on the brake lining, drums or magnets.**

**Magnets:**

Your Electric brakes are equipped with high quality electromagnets that are designed to provide the proper input force and friction characteristics. Your magnets should be inspected and replaced if worn unevenly or abnormally. As indicated below, a straight edge should be used to check wear.



Even if wear is normal, as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet. It is also recommended that the drum armature surface be refaced when replacing magnets. Magnets should also be replaced in pairs-both sides of an axle. Use only genuine Dexter replacement parts when replacing your magnets.

### Shoes and Lining:

A simple visual inspection of your brake lining will tell if they are usable. Replacement is necessary if the lining is worn (to within 1/16" or less), contaminated with grease or oil or abnormally scored or gouged. Hairline heat cracks are normal in bonded lining and should not be a cause for concern. It is important to replace both shoes on each brake and both brakes on the same axle. This is necessary to retain the "balance" of your brakes.

### Troubleshooting:

Most electric brake malfunctions that cannot be corrected by either brake adjustments or synchronization adjustments can generally be traced to electrical system failure. Mechanical causes are ordinarily obvious, i.e. bent or broken parts, worn out lining or magnets, seized lever arms or shoes, scored drums, loose parts, etc. Voltmeter and ammeter are essential tools for proper troubleshooting of electric brakes.

### Wheel Selection:

Wheels are a very important component of your running gear system. When specifying or replacing your wheel it is important that the wheels, tires and axle are properly matched. The following characteristics are extremely important and should be thoroughly checked when replacement wheels are considered:

1. Bolt Circle. Many bolt circle dimensions are available and some vary by so little that it might be possible to attach an improper wheel that does not match the axle hub. Be sure to match your wheel to the axle hub.
2. Capacity. Make sure the wheels have enough load carrying capacity and pressure rating to match the maximum load of the tire and fifth wheel.
3. Offset. This refers to the relationship of the center line of the tire to the hub face of the axle. Care should be taken to match any replacement wheel with the same offset wheel as originally equipped. Failure to match offset can result in reducing the load-carrying capacity of your axle.

## BREAKAWAY SWITCH

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The breakaway switch is located on the front hitch pin box of the fifth wheel. A breakaway switch is a safety device that triggers fifth wheel brakes if the fifth wheel should happen to break away from your vehicle. The switch consists of a box and a cable attached to a trigger mechanism inside the switch box. The other end of the cable has a loop on it which hooks to the tow vehicle. If the fifth wheel breaks away from the tow vehicle this cable is pulled out of the switch box and the trigger mechanism causes the fifth wheel brakes to be activated. The cable separates from the switch box on the fifth wheel. To reactivate the breakaway switch after the cable has been separated from the box, plug the cable back into the box.

Do not use the breakaway switch as a parking brake; continued operation will drain fifth wheel battery and/or damage the brake magnets.

**To Test:** Periodically pull out the breakaway switch pin and attempt to drive forward. If the breakaway system is operating correctly the fifth wheel will not turn, providing the fifth wheel brakes work and the battery is charged.



**CAUTION: Lubricate the cable pin periodically to insure good separation. Make sure the pin is securely in place each time you use your fifth wheel. Do not use the breakaway switch as a parking brake; it draws current. Also, continuous use will damage the brake magnets.**

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Emergency stops can be for any number of reasons. Proper braking techniques should be used during an emergency stop. An emergency road kit should include three reflective warning signs and road flares. A flashlight, spare automotive fuses, an assortment of hand tools and for added safety a separate fire extinguisher should also be included. The fifth wheel is equipped with a fire extinguisher located inside next to the entrance door. The road flares or reflective warning signs may have to be displayed if you are alongside of the road for any length of time. Pull off the roadway as far as possible for an emergency stop. Always turn ON towing vehicle hazard warning flasher when parked along the side of traffic lanes. Set the parking brake. In the event of an emergency stop, for fifth wheel related problem, contact **Holiday Rambler Corporation Customer Service Support (1-877-466-6226)**.

**EMERGENCY  
STOPPING**

Guidelines for placing warning triangles depends on the road. For divided highway or one way road, placement is 10 feet, 100 feet and 200 feet from the rear of the travel trailer. For a two lane road, placement should be 10 feet from front or rear and 100 feet in both directions of the unit. Curves and hills can be tricky as you may have to go up to 500 feet behind the fifth wheel to warn approaching traffic after placing one triangle 10 feet from the rear.

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If fifth wheel was properly and carefully prepared for storage taking it out of storage will not be difficult. The following check list assumes that you stored your fifth wheel with care. If you didn't and extensive freeze damage or other serious deterioration has occurred consult your dealer or an authorized service center for advice.

**CHECK LIST  
- TO OPEN**

- Thoroughly inspect outside of fifth wheel. Look for animal nests in wheel wells.
- Clean all appliance vents, ceiling vents and air conditioning covers. Be sure all furnace, water heater and refrigerator openings are free of debris, insect nests, webs, etc.
- Open all doors and compartments. Check for animal or insect intrusion, water damage or other deterioration.
- Check charge level in batteries. Refill with distilled water and recharge as necessary. Reinstall batteries if necessary. Be sure cable ends and terminals are clean and free of corrosion.
- Check tire pressures. Reinflate to specified cold pressure.
- Remove coverings from windows if necessary.
- Open vents and windows for ventilation.
- Drain, flush and sanitize fresh water system as outlined in water chapter. Inspect drain lines for leaks. Replace if necessary.
- Install a new water filter (if equipped).
- Operate all faucets and fixtures in fresh water system. Check for leaks at all joints and fittings. Repair if necessary.
- Check 12 Volt circuit breakers and inspect fuses.
- Operate all 12 Volt lights and accessories.
- Install new batteries in battery operated devices.
- Test LP-Gas, smoke and carbon monoxide (if equipped) detectors.
- Check monitor panel operation.
- Open and operate vents and vent fans.
- Inspect 120 Volt electrical system which includes power cord, converter, all outlets and exposed wiring. If defects are found consult your servicing dealer or an authorized service center.
- Operate 120 Volt appliances and air conditioner. Be sure to uncover air conditioner.
- Inspect LP-Gas system and check for leaks. If LP tanks show signs of rust or corrosion have them inspected by a qualified LP technician.
- Inspect and clean interior.
- Check sealant around all roof and body seams and windows. Reseal if necessary.
- Lubricate all exterior locks, hinges and latches.
- Wash and wax exterior. Inspect body for scratches or other damage. Touch up or repair as necessary. Flush underside of fifth wheel thoroughly.

Your fifth wheel should be ready for a new traveling season. Your dealer can double check your preparation and correct any defects or make any necessary adjustments.

**Tow Vehicle:**

All exterior lights should be checked before each trip, make sure the brake and turn signal lights function proper. When no exterior lights function check the tow vehicle fuse panel. If one bulb is out, check the bulb and its ground connection.

- Adjust mirrors.
- Install load equalizer hitch (if not already installed).
- Hook up hitch ball assembly; engage lock and retaining clip.
- Connect equalizing hitch bars.
- Attach safety chains.
- Plug in 12 Volt electrical car-trailer connector.
- Connect breakaway cable.
- Test brakes in a safe area, not on a highway.

**Fifth wheel:**

- Remove wheel blocks.
- Check the condition and pressure of the tires.
- Drain and flush out holding tanks. Be sure the valves are closed tightly and the cap is secured.
- Disconnect and store sewer hose.
- Disconnect and store shore line.
- Check the battery charge level.
- Turn off interior lights, water heater, water pump and furnace.
- Turn off the main valve at LP-Gas tank.
- Be certain entrance steps are in the up position.
- Raise jacks completely and store the jack pad.
- Lock all doors, windows, awnings and vents. Fasten bifold and pocket doors securely. Lock refrigerator door.
- Crank down TV antenna. Disconnect the cable TV and phone hook-ups.
- Secure all loose articles.
- Keep the fire extinguisher handy; have it inspected regularly for proper charge.
- Avoid overloading. Distribute load carefully.

Pull forward and check site for forgotten objects and cleanliness. Walk around your fifth wheel one last time to make sure everything is stowed away, locked and secure. Remember that when you store items in outside compartments that these compartments are not waterproof.

## SECURING DINETTE CHAIRS



**WARNING: Do not occupy any of these chairs while fifth wheel is in motion. The chairs are not equipped with occupant restraint systems. In addition, the chairs must be stored in an enclosed area or secured with tie-down straps prior to setting the fifth wheel into motion (to avoid the risk of personal injury to towing vehicle occupants resulting from a crash or a sudden stop).**

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## CHECK LIST FOR STORAGE

- Plumbing Lines - Drain and protect by filling with approved RV antifreeze.
- Water Heater - Drain.
- Toilet - Drain and hold pedal down and pour antifreeze into bowl.
- Fresh Water Tank - Drain.
- Water Filter - (If equipped) Remove and discard filter. Install diverter filter tube in filter assembly.
- Body - Clean and wax. Oil locks and hinges. Repair roof seams as needed. After each snow fall remove heavy wet snow accumulation with a push broom.
- Tires - Block up trailer with wooden blocks or manufactured jack-stands on a hard level surface. Partially deflate tires. Cover to protect against sunlight.
- Countertops and Cabinets. Wash with mild soap and water.
- Curtain - Remove and clean according to care specifications.
- Windows - To protect interior fabrics from fading by sunlight, cover windows by pulling blinds, closing shades or using a separate cover such as a sheet.
- Holding Tanks - Drain and rinse. Close valves. Add a small amount of antifreeze to keep valves and gaskets lubricated.
- Drain Traps - Pour a cup of trailer antifreeze down all drains.
- Batteries - Add distilled water and recharge if needed. Disconnect cables. Remove batteries and store in a cool dry place. Check and recharge as needed.
- Refrigerator - Clean. Leave both doors propped open. Cover exterior panels and roof vents.
- Air Conditioner - Remove air filters and clean or replace. Cover shroud.
- Roof must be kept clear of snow accumulation or damage may occur.



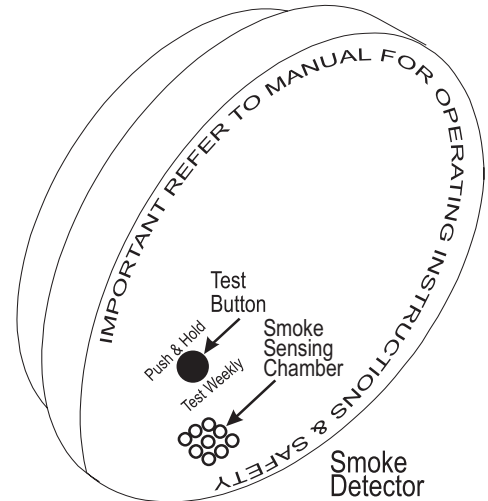
# SMOKE DETECTOR

Statistics show that most fire casualties are not caused by direct flame, but by the less visible smoke (products of combustion). Smoke detectors respond to both visible and invisible products of combustion. The smoke detector will automatically return from alarm to the normal state when the reason for activation, the presence of smoke, is completely removed. Three of the most common causes of fires that kill are: smoking in bed, leaving children unattended and cleaning with flammable fluids. Please be safety conscious and avoid unnecessary risk.



**How to Test: Push and Hold Test Button.**  
**NOTE: Test the smoke alarm operation after the vehicle has been in storage, before each trip and at least once a week during use.**

Thoroughly vacuum the cover and sides with a soft brush attachment every month. Smoke alarm should be cleaned every six months to help keep the unit working efficiently. Do not paint the detector.



The only acceptable batteries for use in the smoke alarm are the Eveready 216 or equivalent. The battery should power the smoke alarm for at least one year, under normal use. When the battery reaches the end of its normal life, a low battery warning (intermittent beeping) will indicate the need for battery replacement.

## Maintenance

If alarm does not sound when the test button is pushed, try the following:

- Inspect for obvious damage and vacuum as recommended.
- Check the battery for proper connection, or replace battery if needed.

## Troubleshooting

If these procedures do not correct the problem, do not attempt repairs. If the smoke alarm is within the warranty period and terms, indicate the nature of the problem and return the unit to your dealer.

Abnormal air conditions may cause the highly sensitive smoke alarm to give a false alarm. If no fire is apparent, ventilate the room and/or blow fresh air into fifth wheel until the alarm stops. Once cleared, the smoke alarm will automatically reset. Dust can lead to excessive sensitivity. Vacuum as recommended.



**WARNING:** Water or cleaning solution may damage the detector. Never spray the detector with cleaning solution of any kind. Ventilate the area where the detector is installed when household cleaning supplies or similar contaminants are being used. Do not try to repair the detector yourself, this will void your warranty. Refer to the manufacturer brochure for directions on returning your smoke detector.



**WARNING:** There is no way to guarantee against injury or loss of life in a fire, however, this smoke detector is intended to help reduce the risk. Proper use and care of smoke detector could save your life.

## LP-GAS DETECTOR

Liquid Propane (LP) Gas is heavier than air and will settle to the lowest point, which is generally the floor of your fifth wheel. Other combustibles which may be detected include alcohol, liquor, deodorants, colognes, perfumes, wine, adhesives, lacquer, kerosene, gasoline, glues and most cleaning agents and propellant of aerosol cans. Most are lighter than air in their vapor state and will only be detected when the fifth wheel is closed up.



LP Detector

## Operation

**POWER ON:** When power is first applied the Yellow LED will flash for 3 minutes while the detector is stabilizing. At the end of that time the LED will turn Green, indicating full operation. If the detector has detected unsafe levels of gas it will immediately go into alarm. Fuse is located behind LP Detector.



**CAUTION:** This detector cannot alarm during the 3 minute warm up cycle.

Simply press the Test switch any time during the warm up cycle or while in normal operation. The LED should flash RED and the alarm should sound. Release the switch. This is the only way to test the detector.



**WARNING: Test the operation of this detector after the fifth wheel has been in storage, before each trip and at least once per week during use.**

The Red LED will Flash and the alarm will sound whenever a dangerous level of propane or methane gas is detected. The detector will continue to alarm until the gas clears or the Mute switch is pressed.

**Procedures to Follow During an Alarm:**

- Turn off all gas appliances (stove, heaters, furnace), extinguish all flames and smoking material, evacuate, leave doors and windows open.
- Turn off the propane tank valve.
- Determine and repair the source of the leak. Seek professional help if necessary.

If the LED is not lit on the LP detector, you can check the fuse located behind the LP detector. To keep your detector in good working order you must:

- Test the detector weekly.
- Observe the color of the indicator light on the front of the detector.
- Vacuum the dust off the detector cover weekly, using the soft brush attachment of your vacuum.

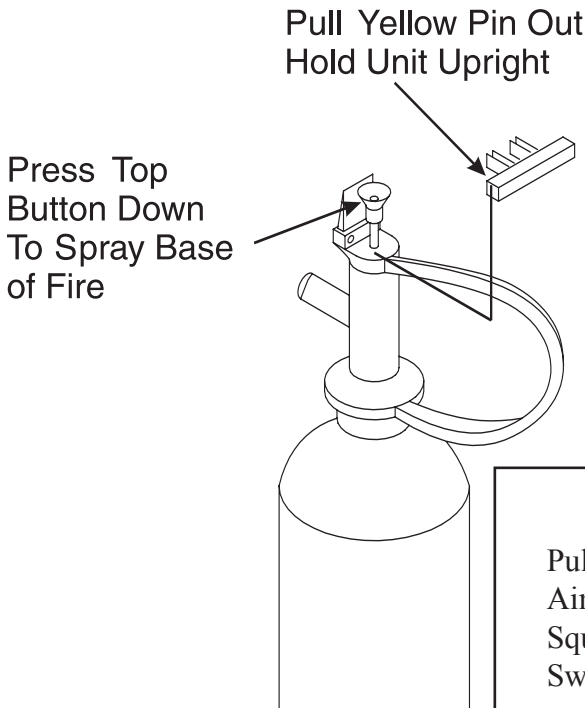
COLOR	DETECTOR OPERATION	SOUNDER
Yellow Flashing	Warm up cycle	off
Solid Green	Normal	off
Flashing Red	Alarm	continuous
Flashing Green	Mute Cycle	off
Flashing LED in mute cycle	Alarm	beep every 30 sec.
Red & Green alternating	Malfunction	2 beep every 15 sec.

PROBLEM	CAUSE & SOLUTION
LED Off	Faulty power connections, reverse polarity, bad or missing fuse or dead battery
No Sound in test NO Red LED in test	Defective. Return Immediately.
Alarm after warm up with no gas present	Contaminated sensor from an extended storage period. Press test-mute switch.
Red & Green LED constant alarm/No reset	Defective. Return Immediately.

**FIRE EXTINGUISHER**

The fire extinguisher in your fifth wheel is located near the main entrance door. Please read the operating instructions that are printed on the fire extinguisher. If there is any doubt on the operation of the fire extin-

guisher, you and your family should practice using it then replace or recharge it. Inspect the fire extinguisher at least once a month; more frequently if the extinguisher is exposed to weather or possible tampering. Do not test the fire extinguisher by partially discharging. This will cause a loss of pressure.



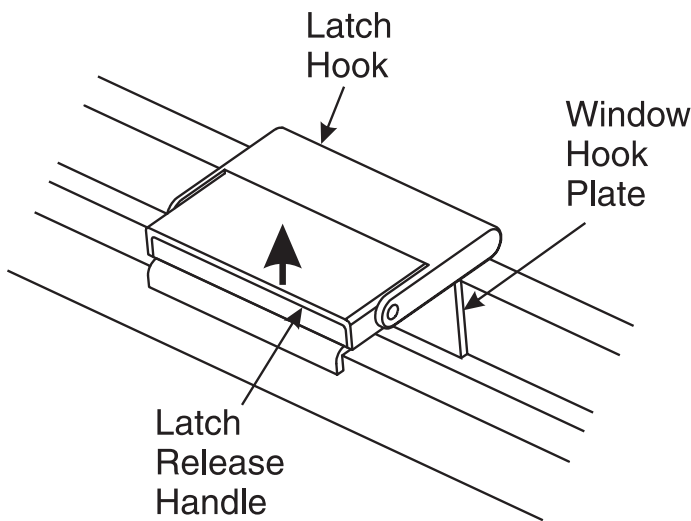
**USE the PASSWORD**

Pull the pin to unlock the extinguisher.  
Aim at the base (bottom) of the fire and stand 6-10 feet away.  
Squeeze the lever to discharge the agent.  
Sweep the spray from left to right until totally extinguished.

**EGRESS EXIT WINDOW**

An egress window is a window which is designated for use as an exit in the case of an emergency. Inside the fifth wheel the egress window is easily identified by the color of the locking handle. It is also marked as an exit.

From the outside of the fifth wheel the identification is just as simple. You need only to look for hinges along the top of the window. The day to day window functions are the same as all other windows. The egress window operations occur by lifting the handle and pushing outward on the window. Pulling the window closed and lowering the handles will secure the egress window.



The egress window should be opened twice a year. There is a rubber seal which the window tends to stick to when closed. When the window sticks to the rubber seal the window can be extremely hard to open. Opening the window every 6 months will reduce the likelihood of the window sticking to the rubber seal making for ease of operation.

The hidden egress hinge provides a clear and wide (in excess of 90°) emergency exit without announcing its presence to the outside world. There is no need to find and manipulate complicated emergency exit latches. Simply remove the screen using the convenient pull handle, lift and swing the vent latch towards you. Push out on the window.

*Slide-out Egress  
Exit Window*

---

There are two important factors to consider when loading your fifth wheel: total weight and balance. When loading heavy objects, keep them as low as possible, preferably on the floor. Load weight must be distributed as evenly as possible.

**VEHICLE  
LOADING**

**Gross Vehicle Weight Rating (GVWR)**

Your vehicle's GVWR is printed on the manufacturer federal certification label, located by entrance door. This number represents the fifth wheel maximum permissible weight. This weight must not be exceeded when loading your fifth wheel. Overloading can be safety hazard.

**Unloaded Vehicle Weight (UVW)**

This number represents the weight of the fifth wheel as built at the factory. If applicable, it includes full generator fuel, engine oil and coolants. UVW does not include cargo, fresh water, LP-Gas or dealer installed accessories.

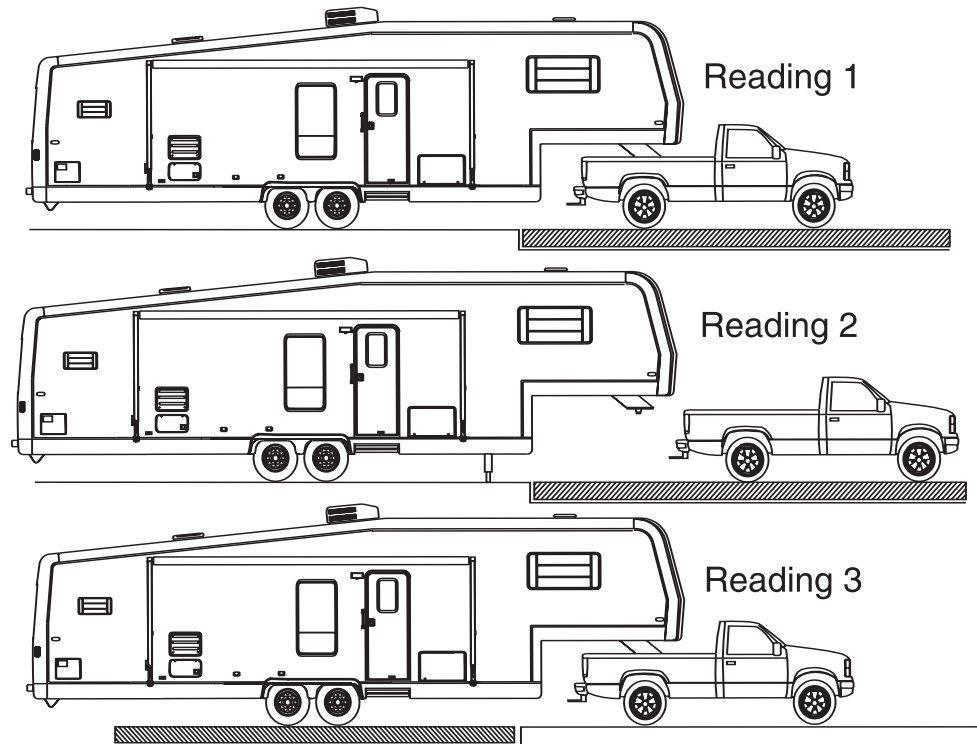
**Gross Axle Weight Rating (GAWR)**

Your towable vehicle's GAWR is printed on the manufacturer federal certification label located by the entrance door. This number represents the maximum permissible load for each axle and must be considered in distributing weight as evenly as possible. It is important not to exceed this weight for each axle. Overloading axles can result in adverse handling characteristics.

**Net Carry Capacity (NCC)**

NCC is the maximum weight, beyond the unloaded vehicle weight, which can be carried safely without exceeding the GVWR. NCC includes: personal belongings, food, dishes, water, LP gas, dealer installed accessories, etc. To find your vehicle's NCC, subtract unloaded vehicle weight from the GVWR.

## WEIGHING THE UNIT



Reading 1 - **Tow Vehicle & Hitch Weight.** Level & loaded for travel trailer.

Reading 2 - **Tow Vehicle Only.** Loaded for fifth wheel.

Reading 3 - **GAW Gross Axle Weight.** Entire unit on scale level & loaded for fifth wheel. This is weight of fifth wheel without hitch weight.

**Hitch Weight Only** - Subtract Reading 2 (tow vehicle) from Reading 1 (tow vehicle & hitch weight).

**GCW (Gross Combined Weight)** - Add Reading 1 (tow vehicle & hitch weight) and Reading 3 (GAW of fifth wheel).



**NOTE:** Compare the actual weights to the ratings to ensure you are below the maximum ratings.



**WARNINGS:** Never add item such as generators, heavy tools, boxes or motorcycle racks to the rear of the travel trailer. Weight behind the axle will tend to magnify any sway that may occur when passing trucks or in gusty winds.

**WEIGHT INFORMATION**

Consult Owner's Manual For Specific Weighing Instructions and Towing Guidelines.

Model \_\_\_\_\_

GVWR \_\_\_\_\_ UVW \_\_\_\_\_

NCC \_\_\_\_\_ GCWR \_\_\_\_\_

This fifth wheel is capable of carrying up to \_\_\_\_\_ GAL. of fresh water (including the water heater) for a total of \_\_\_\_\_ LBS.

**REFERENCE:**

The weight of **fresh water is 8.33 IBS/GAL**; the weight of **LP-Gas is 4.5 LBS/GAL** (average).

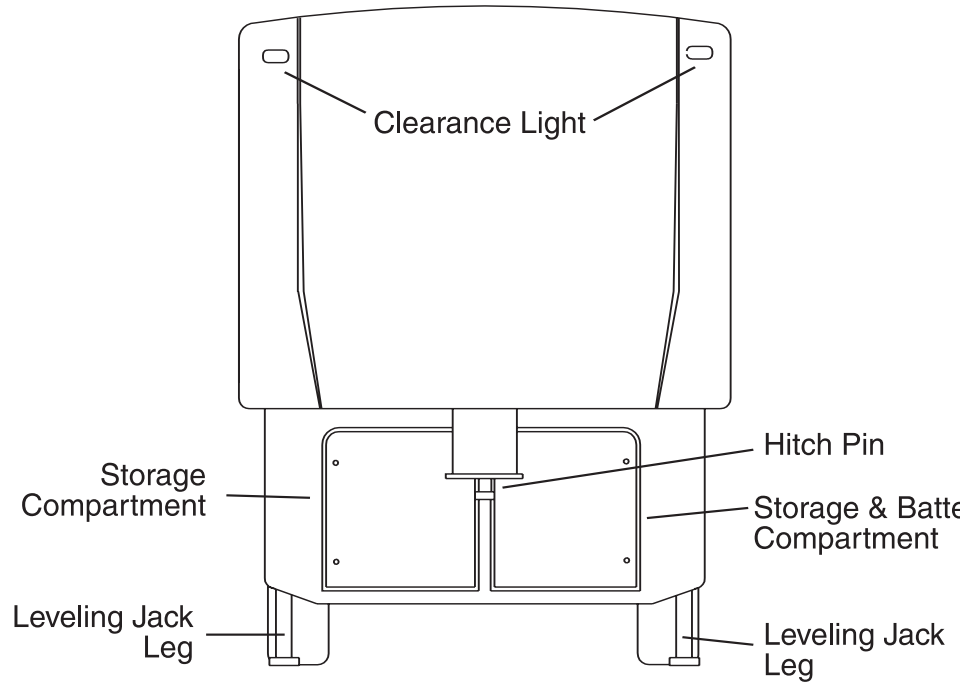
**GVWR** Your vehicle's GVWR is printed on the manufacturer's federal certification label located by the entrance door. This number represents the fifth wheel maximum permissible weight. This weight must not be exceeded when loading your fifth wheel. Overloading can be a safety hazard.

**UVW** This number represents the weight of the fifth wheel as built at the factory. If applicable, it includes full generator fuel, engine oil and coolants. UVW does not include cargo, fresh water, LP-Gas or dealer installed accessories.

**NCC** NCC is the maximum weight, beyond the unloaded vehicle weight, which can be carried safely without exceeding the GVWR. It includes personal belongings, food, dishes, water, LP-Gas, dealer installed accessories, etc. To find your vehicle's NCC, subtract the unloaded vehicle weight from the GVWR.

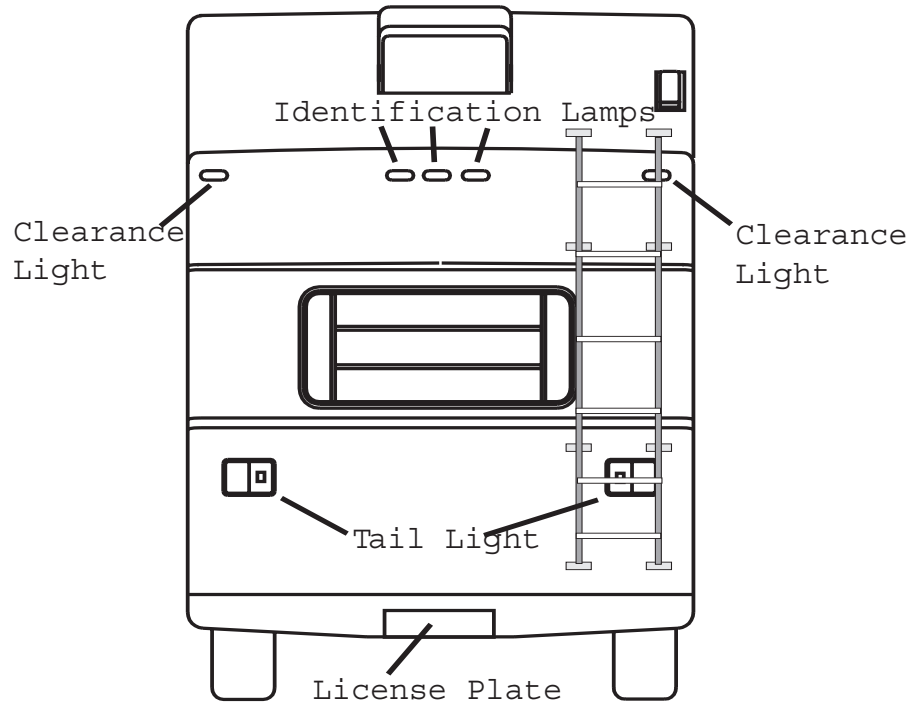
**GAWR** Your towable vehicle's GAWR is printed on the manufacturer's federal certification label located by the entrance door. This number represents the maximum permissible load for each axle and must be considered in distributing weight as evenly as possible. It is important not to exceed this weight for each axle. Overloading the axles can result in adverse handling characteristics.

### VIEW-FRONT



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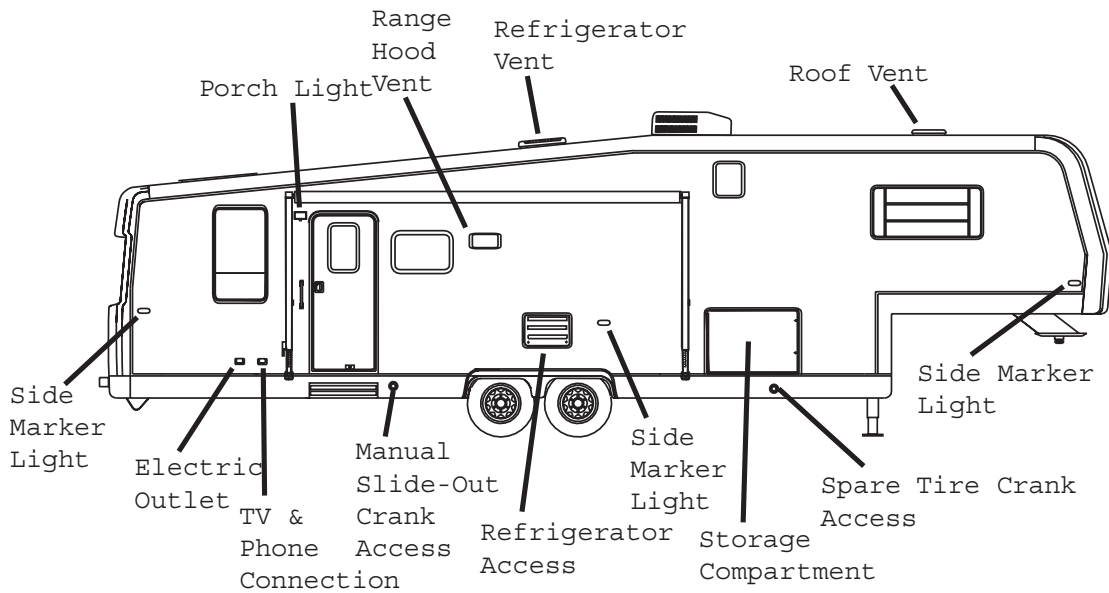
### VIEW-REAR





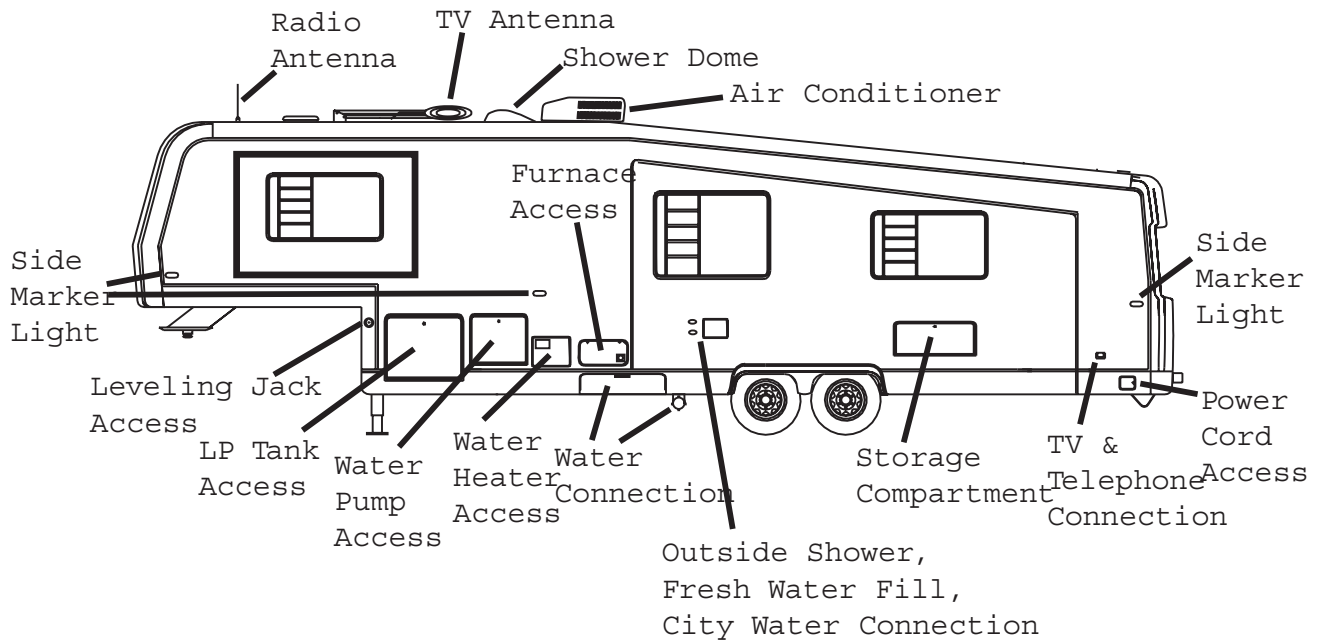
Locations vary from model to model. Identify each by their specific view.

**VIEW-CURBSIDE**



Locations vary from model to model. Identify each by their specific view.

**VIEW-ROADSIDE**



*Notes*

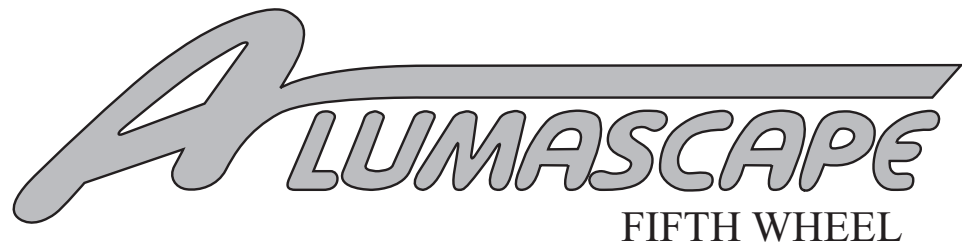
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# **A** LUMASCAPE

FIFTH WHEEL

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**INTRODUCTION**

This chapter covers the operation and care of various appliances and types of equipment found in your fifth wheel. Your fifth wheel is equipped with many different kinds of equipment such as: refrigerator, range, microwave, television, stereo, furnace, water heater, air conditioner, awning and slide out rooms. Many operate on LP-Gas, AC/DC current or a combination of both. Detailed information, cautions and warning instructions for your various appliances and electronic components, other than what is in this chapter, can be found in the manufacturer manuals located in your fifth wheel information file.



**WARNING: Most LP-Gas appliances used in the fifth wheel are vented to the outside. When parked close to a gasoline pump it is possible that gasoline fumes could enter this type of appliance and ignite from the burner flame, causing a fire or explosion. Shut off these appliances when refueling the tow vehicle.**

Breathing carbon monoxide fumes may cause nausea, fainting or death. Inadequate ventilation or partial blockage of LP-Gas appliances and equipment flue can result in increased carbon monoxide emissions when operating in LP-Gas mode.

Do not store cigarette lighter fluid, petrol, ether or other flammable liquids in the refrigerator as they may cause a fire or explosion.

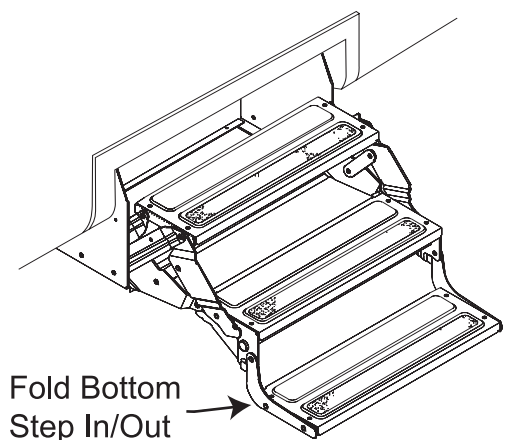
The entry steps fold under trailer when traveling. To extend step, pull assembly out from underneath trailer. Bottom step is folded over second step. Roll bottom step out and down after step assembly is extended. To store steps fold bottom step up over second step and push assembly underneath trailer.

**ENTRY STEP**

**Lubricate the Mechanism:**

It is recommended that you lubricate the mechanism every 30 to 60 days.

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



**Covering Nicks & Scratches:**

- Seal nicks or scratches with an automotive grade primer to prevent rust.

- Once the nick or scratch has been sealed, cover the damaged area with an automotive grade or high-gloss paint.



**CAUTION:** To prevent the possibility of slipping on the RV step, avoid letting any excess lubricant come in contact with the surface of the RV step itself. Carefully clean the entire RV step after lubricating the mechanism.

## ENTRY DOOR

To keep your door operating in the manner in which it was designed and delivered to you, there are some routine maintenance items that should be handled on a regular basis.

### 1. Strike Plate Adjustment:

The door in your fifth wheel was installed and adjusted in a factory setting. The setting of the strike plate or bolt may change over the course of time and settlement of the fifth wheel. The setting may need to be changed or adjusted to insure that your door operates as smoothly and efficiently as it should. To adjust the strike plate you will need to loosen the two Phillips head screws holding the strike to the jamb system. Move the plate in or out as needed to obtain a proper seal and closing force. Retighten the screws.



**CAUTION:** If you loosen the screws too far on the out-swing doors the backer plate will release and drop down into the door jamb. Should this happen, replace the short screws with a screw that is long enough to go through the jamb system and into the framework of the sidewall.

### 2. Locks:

The key cylinder in your locks need to be lubricated on an annual basis or as needed. Always use powdered graphite, never a petroleum product. The petroleum product will gum up the cylinder and prevent smooth operation. Apply a light coating of white lithium grease to the face of the lock bolt to obtain a smooth closing.

### 3. Hinges:

The hinges on your door should be lubricated annually, or as needed, with any high quality dry spray lubricant.

### 4. Fiberglass skin:

To maintain good appearance and long service life, the door skin panels should be washed and cleaned periodically. Cleaning removes the accumulation of dust and dirt which can combine with sunlight and wind to attack exposed surfaces both chemically and abrasively.

**SLIDE-OUT  
OPERATION**  
*Extending*

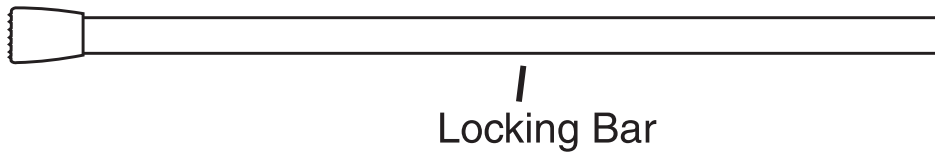
Before you operate the slide-out system:

- The path for the room to move is clear.
- The battery is fully charged and hooked up to the electrical system.
- The unit is level.

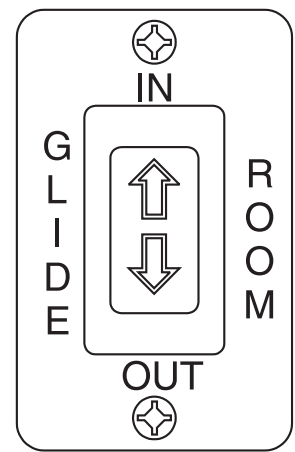


**CAUTION: Confirm you have 5 or more feet of clear space outside of the trailer before moving slide-out room in the OUT position. Be sure there is sufficient clearance on inside of trailer before retracting slide-out room. Check that all cabinet doors are securely closed before extending or retracting rooms. Clean floor before retracting slide-out room. Dirt or grit that is trapped under slide-out room will damage floor. Do not operate slide-out room when the battery has been removed from trailer. Use with converter only may damage slide-out electrical components. Continuous operation of the slide-out room could cause battery drain and damage to slide-out motor from overheating. Never move trailer without having slide-out room retracted.**

1. Locate two locking bar mechanisms on top of slide-out room inside trailer. Remove bars from between wall and top of slide out room. Store bars for reuse before trailer is moved.



2. Press and hold slide-out room switch in the OUT position. Slide-out room will move slowly to the out position and drive motor will not stop automatically. To stop slide-out room before reaching OUT position, release switch. To continue room movement, push and hold switch in.
3. Release the switch, which will lock the room into position.



## Appliances & Equipment

### Retracting

1. Check that there is sufficient clearance inside trailer for slide-out room.
2. If applicable clean floor.
3. Remove any debris from door top of room.
4. Press and hold switch in the IN position. To stop slide-out room before room reaches IN position, release switch. To continue room movement, push and hold switch in.
5. Release the switch, which will lock the room into position.
6. After slide-out room is all the way retracted locate two removed locking bar mechanisms. Place bar mechanisms between wall and top edge of slide-out room and lock in place.

### Manually Overriding

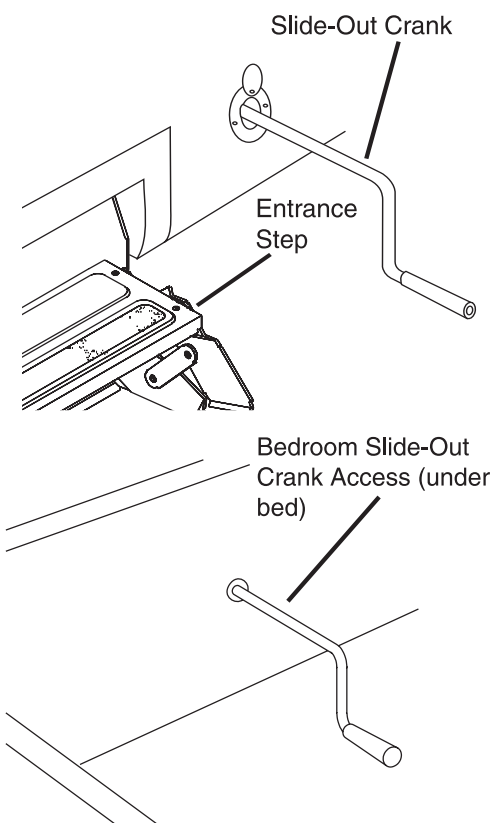
Your slide-out system is equipped with a manual override that allows you to retract the room in the event of loss of power.



**NOTE: If the room does not move when the switch is pressed, check the following:**  
The battery is fully charged and connected.  
The transit bars are removed.



**WARNING: Do not work on your slide-out system unless the battery is disconnected. Make sure the floor is clean before you retract the slide-out room. Dirt or grit that is trapped under the slide-out could damage the floor**



After the previous items have been checked and the room still does not move when the slide-out switch is pressed, follow these simple steps to manually override your slide-out room:

1. Disconnect battery cables before manually overriding slide-out system.
2. Locate the slide-out crank. Galley and bedroom crank has a slotted end, wardrobe crank has a hex head end.
3. Locate crank access hole on outside of fifth wheel (galley slide-out) or bedroom access hole for bedroom slide-out.
4. Insert crank to engage motor shaft.
5. Turn crank to move slide-out room fully in (or out).



Your slide-out system has been designed to require very little maintenance. To ensure the long life of your slide-out system, read and follow these few simple procedures.

*Preventative  
Maintenance*

- When the room is out, visually inspect the inner slide rail assemblies. Check for excess build-up of dirt or other foreign material; remove any debris that may be present.
- If the system squeaks or makes any noise, it is permissible to apply a coat of light weight oil to the drive shaft and roller areas. Remove any excess oil to prevent dirt and debris build-up. Do not use grease.

Your fifth wheel is equipped with both 120 Volt AC and 12 Volt DC electrical systems. To hook-up to 120 Volt outside power, find the 50 amp grounded supply cord (shore line) and plug it into an outside 120 Volt power source and then into the fifth wheel input plug. Switch the main breaker to the ON position. When the breaker is turned on, the 120 Volt system will energize all 120 Volt circuits and outlets. The power converter automatically supplies 120 Volt DC power where it's needed inside. When a 120 Volt power source is not available, the coach batteries provide 12 Volt DC current to the same points as the converter. Changeover is accomplished automatically.

**HOOK-UPS**  
*Shore Cord*

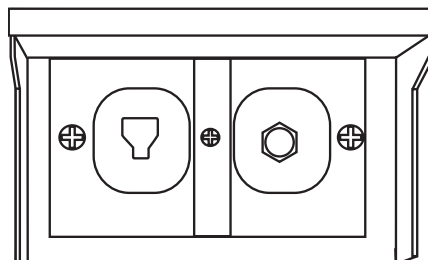


**WARNING: Disconnect the 120 Volt AC electrical shore cord and the negative terminal from the 12V DC battery before working on the electrical system. Remove all rings, metal watch bands and other metal jewelry before working around batteries and connector. Be cautious when using metal tools. If a tool contacts a battery terminal or metal connected to it, a short circuit could occur which could cause personal injury, explosion or fire.**



**CAUTION: Before hooking up to park shore power, verify that proper voltage and ground protection is present. After hooking up to park shore power, verify that proper voltage and ground protection are present in the fifth wheel. Inexpensive testers are available for this purpose.**

Your fifth wheel is equipped with cable TV and telephone hook-ups. Located on the roadside rear, these hook-ups can be used to connect to cable TV and telephone service at campgrounds.



*Cable TV & Telephone  
Hook-Ups*

### Tips

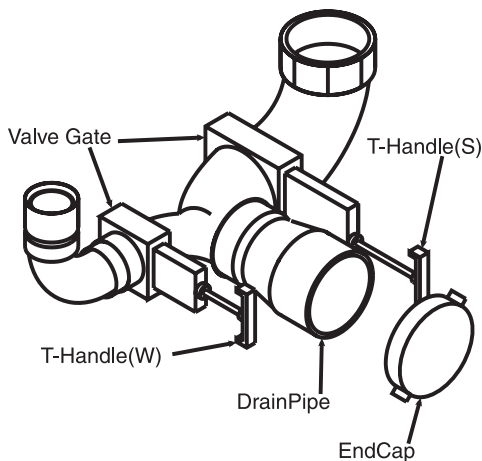
1. If picture is weak and the antenna boost is working try moving the fifth wheel a few feet forward or backward.
2. If picture is weak or no picture, possible shorted or open coax. The coax cable is made up of two conductors: A center conductor which is usually copper and the ground which is woven or braided aluminum. There is insulating material that separates the two conductors known as the die-electric. The ground and center conductor are to remain separate from one another. When installing a metal end onto the coax cable, use care so that none of the woven ground strands come in contact with the center conductor. To test for a suspected bad coax wire run, all that is needed is a continuity tester. Unscrew both ends of the suspected bad coax run. With the continuity tester, check between the center conductor and outside threaded ring. If continuity is present, coax is shorted. To test for open connection of a particular coax run, use tester leads to touch each end of the coaxes ground or center conductor. Continuity should be present. For proper operation there should be continuity from one end to the other of both the ground and center conductor. There should be no continuity between the ground and center conductor. Though damage does not usually occur from a shorted or open coax cable, picture quality is compromised.

---

The holding tank drain valve handles and the drain termination is located on the roadside of the fifth wheel.

## SEWER HOSE

The sewer hose is stored in a storage tube that is located on the roadside of the fifth wheel. Drain the SEWAGE (black) tanks first and then the WASTE (gray) tank. By using this sequence the sewage will be flushed out of the drain system and sewer hose by the waste water.



### To Connect:

1. Remove the sewer hose from the storage tube.
2. Check that all drain valves are in the closed position.
3. Remove the safety cap from the drain termination.
4. Connect the sewer hose to the drain termination by attaching the hose coupling to the drain termination and turning at 90°, allowing the tabs on the hose coupling to lock onto the tabs on the sewer termination.
5. Place the discharge end of the sewer hose into the sewer connection and then check that all the connections are secure to prevent accidental spillage.
6. Refer to "WASTE WATER SYSTEMS" to drain tanks.

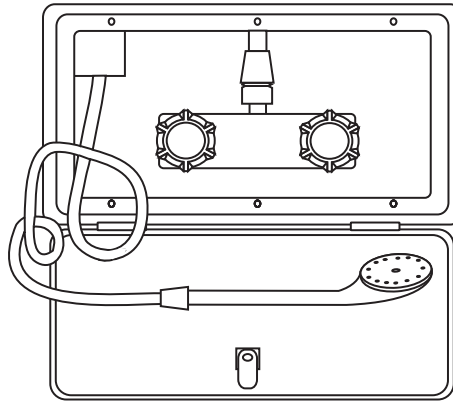
## WATER - FRESH

City water and fresh water tank fill is located on roadside of trailer next to the outside shower. When connecting supply hose to fittings use a hose manufactured and labeled potable water to insure that hose will not flavor water. Attach water supply hose to city water hook-up and turn water supply on to pressurize faucets and water heater. Attach water supply hose to water tank fill to fill water tank. Refer to “FRESH WATER SYSTEMS” for specific instructions.

POTABLE WATER ONLY.  
SANITIZE, FLUSH AND DRAIN  
BEFORE USING. SEE INSTRUCTION MANUAL.



WATER TANK FILL



The refrigerator operates from either LP-Gas or 120 Volts AC electric. Controls are electronic which require the 12 Volts DC to be no higher than 15.4 Volts or lower than 10.5 Volts C. The AC voltage limits 132 Volts AC maximum and 108 Volts AC minimum. The refrigerator (from front view) needs to be leveled within 3° side to side and 6° front to back. Using a torpedo or bulls eye (fence post) level, place the onto the freezer plate. The level should be within the circle by a half of a bubble. Generally, this is within comfortable living conditions for most people. The heat source for the cooling unit is supplied by an electric heating element or an LP-Gas flame. The heat source, which is calibrated in BTU’s (British thermal units), is concentrated to a specific area of the cooling unit. Operating the refrigerator in an “off level” condition will separate the sodium chromate and crystallize from the heat source. This blocks the recirculation action of the cooling unit, which causes accumulative and irreparable damage. The LP side of the refrigerator needs to be serviced yearly depending on use. The LP-Gas pressure should be check as well. Over time the BTU rating can change, affecting the refrigerator’s performance. Ambient air temperature and humidity can also affect its performance and function. LP-Gas operation at an altitude higher than 5,500 feet lowers the BTU rating, which affects the refrigerator’s performance. If possible, switch mode operation to 120 Volts AC electric while at higher altitude.

## REFRIGERATOR



**WARNING: Do not use the refrigerator if there is an ammonia smell inside or outside of the refrigerator, or if a yellowish substance appears inside or in the outside access compartment. This can be an indication of a refrigerant leak. Contact an authorized repair facility.**

## Appliances & Equipment

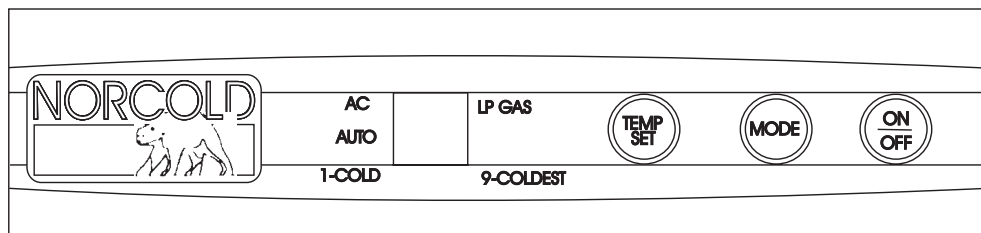
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### Operation Specifics

- If possible, cool items first before putting them into the refrigerator.
- Keep the door shut. Think about what you want before opening the door.
- Try to allow the refrigerator 24 hours of operation before you depart. This will help get a “head start” with the refrigeration process.
- A box of open baking soda will help absorb food odors. Wipe up any spilled soda.

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### Refrigerator Controls



The refrigerator control panel is between the freezer compartment and the fresh food compartment. To maintain the operating control functions of the refrigerator, a 12 Volt DC power supply is necessary.

**The ON/OFF button starts and shuts down the refrigerator.**

- If the refrigerator is shut down, push the ON/OFF button to start the refrigerator in auto mode.
- If the refrigerator is operating, push and hold the ON/OFF button for two seconds to shut it down.

**The TEMP SET button controls the temperature adjustment of the freezer and the fresh food compartment. The temperature adjustment that you select does not change if the operation mode of the refrigerator changes.**

- Push the TEMP SET button and the temperature setting “1-9” appears in the center display.
- Push and hold the TEMP SET button and the temperature setting changes.
- Number “9” is the coldest setting.

**The MODE button controls the operation mode of the refrigerator.**

- Push and hold the MODE button and each of the four operating modes of the refrigerator flash one at a time in the center display.
- There is one automatic mode of operation and three manual modes of operation.
- When the mode of operation that you wish shows in the center display, release the MODE button.

*Automatic Mode  
Operation*

When you select AUTO mode, the refrigerator automatically selects the most efficient energy source that is available for operation. If a more efficient energy source becomes available, the refrigerator controls change from the current energy source to the more efficient energy source. The controls select the energy source in this sequence.

1. When 120 Volts AC is available to the refrigerator, “AU” “AC” flashes in the center display. This means that the refrigerator is operating on AC electric. After ten seconds, the “AU” “AC” goes off and only a power indicator remains.

2. If 120 Volts AC is not available to the refrigerator, “AU” “LP” flashed in the center display. This means that the refrigerator is operating on LP-Gas.

3. After the refrigerator is operating, press TEMP SET button and adjust to the desired temperature.

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*Manual Mode Operation*

When you select one of the two manual modes:

1. “AC” means that the refrigerator is operating on AC electric.
2. “LP” means that the refrigerator is operating on LP-Gas.

If the LP-Gas does not ignite in 30 seconds the controls either change to a different energy source or the gas safety valve closes and “F” appears. If the gas does not ignite after several attempts, consult your dealer or authorized Norcold service center.

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*Door Handles*

During travel, the door latch prevents the door from opening. When closing each door, push toward the refrigerator until you hear a “click” sound.

During storage, the storage latch prevents the door from completely closing. Use it to prevent odors when the refrigerator is stored for an extended period of time. To operate the storage latch, open each door about 1/2 inch and push the storage latch into the cutout of the strike plate. Do not use the storage latch as a travel latch because the doors will not be fully closed.

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*Cleaning*

A good time to clean the refrigerator is just after you defrost it. Clean the inside of the refrigerator as often as necessary to avoid odors. Remove all food from the refrigerator.



**NOTE:** Do not use abrasive cleaners, chemicals or scouring pads. They can damage the interior of the refrigerator. “Dawn,” “Fantastic” and “Formula 409” are the brand names of three products recommended for use. Wash the interior with a mild cleaner or a solution of liquid dish detergent and warm water. Rinse with a solution of baking soda and clean water. Dry with a clean cloth.



**CAUTION:** Do not use a hot air blower. Permanent damage could result from warping metal or plastic parts. Do not use a knife, ice pick or any other sharp tool to remove ice from the freezer, they can create a leak in the ammonia system.

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## MICROWAVE

Microwave operates on AC current only. After placing the food in a suitable container, open the oven door and put it on the glass tray. The glass tray and roller guide must always be in place during cooking. When shutting the door, make sure that it is firmly closed.

- The oven light is only on when the microwave oven is operating.
- The oven door can be opened at any time during operation by touching the door release button on the control panel. The oven will automatically shut off.
- Each time a pad is touched, a “beep” will sound to acknowledge the touch.
- The oven automatically cooks on full power unless set to a lower power level.
- The display will show “:0” when the oven is plugged in.
- The time clock returns to the present time when the cooking time ends. When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information is retained. To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during the oven operation, all information is retained.
- If the START pad is touched and the oven does not operate, check the area between the door and door seal for obstructions and make sure the door is closed securely. The oven will not start cooking until the door is completely closed or the program has been reset.

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### Setting the Clock

1. Touch the CLOCK/A.START pad. This is a 12-hour clock system.
2. Touch the CLOCK/A.START pad once more.
3. Enter the correct time of day by touching the numbers in sequence.
4. Touch the CLOCK/A.START pad.

When the oven is first plugged in, the display will flash “:0” and a tone will sound. If the AC power goes off, the display shows “:0” when the power comes back on.

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- Turn the oven off before cleaning.
- Keep the inside of the oven clean. When food spatters or spilled liquids adhere to oven walls, wipe with a damp cloth. Mild detergent may be used if the oven gets very dirty. The use of harsh detergent or abrasive is not recommended.
- The outside oven surface should be cleaned with soap and water, and rinsed and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.
- If the control panel becomes wet, clean with a soft, dry cloth. Do not use harsh detergents or abrasive on the control panel.
- If steam accumulates inside or around the outside of the oven door, wipe it away with a soft cloth. This may occur when the microwave oven is operated under high humidity conditions and in no way indicates malfunction of the unit.
- It is occasionally necessary to remove the glass tray for cleaning. Wash the tray in warm sudsy water or in a dishwasher.
- The roller guide and oven cavity floor should be cleaned regularly to avoid excessive noise. Simply wipe the bottom surface of the oven with mild detergent water or window cleaner and then dry. The roller guide may be washed in mild sudsy water.

### *Care of the Microwave Oven*

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Before cooking on the range top, the cover must be in full upright and folded position, pushed toward the outside wall, preventing the cover from falling on the range top during cooking.

- Never close the cover while the burners are in use.
- Do not use the cover as a griddle.
- The oven may be used with the cover down.
- The bi-fold cover must always be closed when the fifth wheel is in transit.



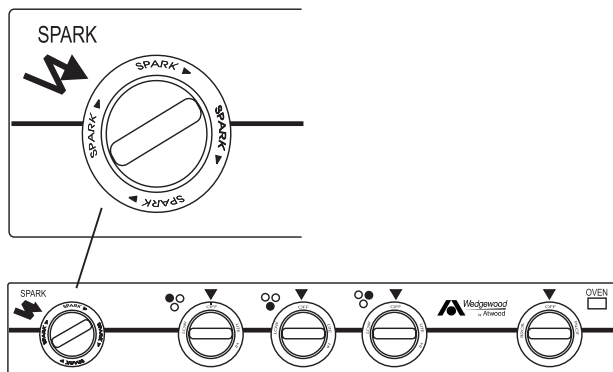
**WARNING: Do not heat fifth wheel interior with range or oven. Gas combustion consumes oxygen inside the fifth wheel.**

### **COOKTOP** *Lighting Top Burners with Spark Ignition*

## Appliances & Equipment

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- Turn the appropriate burner knob counter-clockwise to ON or LITE. Do not attempt to light more than one burner at a time.
- Turn the SPARK knob clockwise one click. If the burner fails to light, continue turning the SPARK knob clockwise until the burner lights.
- To extinguish the top burner flame, turn the appropriate burner knob clockwise to OFF.



**WARNING: Top cover must be open when the cooking surface is in operation.**

- Push in the oven control knob and rotate counter-clockwise to PILOT ON.
- Light the oven pilot located near the back of the oven, under the broiler shelf and to the left of the oven burner.
- Set the oven control knob to Pilot ON to maintain pilot flame. The oven and broiler are now ready for operation. The oven pilot has been factory set and requires no further adjustment.
- To extinguish the oven pilot, push in the oven control knob and rotate clockwise to OFF.



**WARNING: Extinguish all pilots when refueling or traveling.**

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## Maintenance

- Clean all surfaces as soon as possible after boilovers or spillovers.
- Use only warm soapy water to clean the burner grates, cooktops, painted surfaces, porcelain surfaces, stainless steel surfaces and plastic items on your range or cooktop. Do not use grit or acid-type cleaners.
- Do not use steel wool or abrasive cleaners as they will damage your range or cooktop. Use only non-abrasive plastic scrubbing pads.



- Do not allow foods containing acids (such as lemon juice, tomato juice or vinegar) to remain on porcelain or painted surfaces. Acids may remove the glossy finish. Wipe up egg spills when cooktop is cool.
- Do not wash warm porcelain surfaces. Allow these areas to cool before cleaning to avoid burning yourself or the porcelain cracking.

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The air conditioner was designed to operate from a 115 Volt AC, 60 HZ Single 1 Phase power supply. As a general rule, air entering the air conditioner will be cooled about 15°F to 20°F, depending on the outside temperature and humidity conditions. For example, if the air entering the return air grills in the air conditioner is 80° F, the air leaving the discharge grills in the air conditioner will be 60° to 65° F.

## AIR CONDITIONER ROOF

Parking the fifth wheel in a shaded area, keeping windows and doors shut and avoiding the use of heat producing appliances in the fifth wheel will help to reduce the heat gain.



**CAUTION: Wait at least two minutes before restarting the air conditioner after shutting off the air conditioner with OFF or temperature control. This will equalize the compressor pressure. Failure to follow this instruction may cause circuit breakers or fuses to open.**

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It is important, when the outdoor temperature drops in the evening or during the night to below 75° F, that the thermostat (temperature control) be set at a midpoint between “Warmer” and “Cooler”. If the setting is at “Cooler”, the cooler (evaporator) coil may become iced-up and stop cooling. During the day, when the temperatures have risen above 75° F, reset the thermostat switch to the desired setting.

*Operation On  
Cooler Nights*



**NOTE: Should icing-up occur, it is necessary to let the cooling (evaporator) coil defrost before normal cooling operation is resumed. During this time, operate the unit in the “HIGH FAN” position with the system at maximum air flow. When increased or full air flow is observed, the cooling coil should be clear of ice.**

## Appliances & Equipment

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### Short Cycling

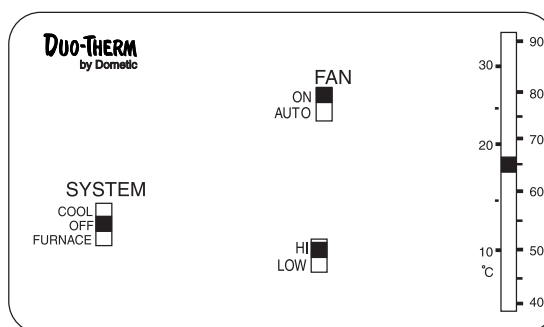
When an air conditioner is in operation its compressor circulates refrigerant under high pressure. Once off, it will take two to three minutes for this high pressure to equalize.

The air conditioning compressor is unable to start against high pressure. Therefore, once the air conditioner is turned off, it is important to leave it off for two to three minutes before restarting.

Short cycling the compressor (or starting it before pressures have equalized) will, in some instances, kick the circuit breaker or overload.

### Wall Thermostat

To operate the roof air conditioner, locate the wall thermostat. After using the air conditioner you will need to determine if you need to run the thermostat on AUTO or if you should run the FAN on HIGH speed. Set the temperature control to the desired setting (located to the right side of the thermostat).



### Maintenance

The filters are made from long life non-allergenic natural fibers which can be cleaned and reused, and which completely filter the circulated air when the air conditioner is in operation. If the filter is not cleaned at regular intervals they may become partially clogged with lint, dirt, grease, etc. A clogged filter will produce a loss of air volume and may eventually cause an icing-up of the cooling (evaporator) coil.



**NOTE: Do not operate your air conditioner for extended periods of time without the filter installed.**

## FURNACE

The furnace and its related components are 12 Volt DC operated. The furnace uses LP-Gas as its fuel source. Electronic circuitry (automatic ignition) is used to ignite the burner. The furnace uses outside air for the burner combustion. Exhaust is expelled through the outside vent. Inside air is drawn into the furnace and blown across the internal heat exchanger. Heated air is then discharged through a plenum which runs, front to rear, in the floor of the fifth wheel. A warm air discharge is incorporated to heat the unit's holding tanks. Operation is as follows: The wall thermostat sends a

signal to the front roof air conditioner circuit board, which closes a relay. Closing a relay sends an electrical signal to the furnace to begin the ignition cycle. There is a small time delay before the blower motor begins. Once the blower motor attains a predetermined speed it will close the air prover or sail switch. The sail switch, which is now closed, sends the electrical signal through a high temperature protection switch, then to the automatic ignition circuit board. After the thermostat is satisfied, the gas valve closes and extinguishes the burner. The blower motor stops approximately 45 seconds later.



**WARNING: Never attempt to modify this furnace. Fire, explosion, asphyxiation or carbon monoxide poisoning may result in serious bodily harm or death. Do not store anything next to the furnace. For your safety do not use gasoline or other flammable vapors or liquids in the vicinity of the furnace.**



**NOTE: The automatic ignition circuit board will attempt to light the burner three times before the ignition board will go into “lock-out.” If the burner does not light, the furnace blower motor will continue to run and the wall thermostat will have to be cycled off.**



**WARNING: IF YOU SMELL GAS**  
Extinguish all open flames and turn off the main gas supply. Liquid propane is highly volatile and extremely dangerous. Explosion, fire, property damage, injury or death can result. Propane is a “heavy” gas and will lay on the floor and “hide” in corners. Open all windows and door. Do not touch any electrical switches. They may cause a spark which can ignite. Contact a qualified service center and have the problem correctly diagnosed and repaired before resuming operation.



**NOTE: Do not store any items or materials in the furnace area. Restricted air flow may hamper furnace operation leading to failure and/or fire hazard.**

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The furnace will operate when the following conditions have been met:

1. The LP-Gas valve on the LP tank is on, and the LP-Gas valve at the furnace is on.
2. The ON/OFF switch next to the LP-Gas fill valve is turned to ON.
3. The fifth wheel house batteries are charged.
4. The battery cut-off switch is in the ON position.

*Operation*

## Appliances & Equipment

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### Using the Furnace

- Set the SYSTEM switch to FURNACE
- Set the FAN switch to AUTO.
- Set desired temperature.



**NOTE: When washing the exterior of the fifth wheel, avoid a direct stream of water into the outside furnace vents. This can damage the furnace.**

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### Tips

- After storage, the furnace may produce a musty smell during the first couple of cycles.
- Operating the furnace at an altitude above 5,000 feet reduces the BTU output due to air/fuel ratio.
- The furnace will periodically need to be serviced by a qualified technician. If the furnace exhibits unusual symptoms or noises, or has an unusual odor when operating, have the furnace checked or serviced.

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### If the Furnace Fails to Light

If the furnace fails to light, make sure the LP-Gas supply valves are open, and the LP-Gas switch is turned ON.

Make sure the battery cut-off switch is ON.

The furnace will not light if the blower motor is not spinning to its specified speed. This may be due to a low house battery charge condition. Hook-up to shore power to charge the batteries.

If you smell gas and the blower motor is spinning, do not attempt additional furnace operation. This may result in an explosion, fire or personal injury. Contact a qualified technician.

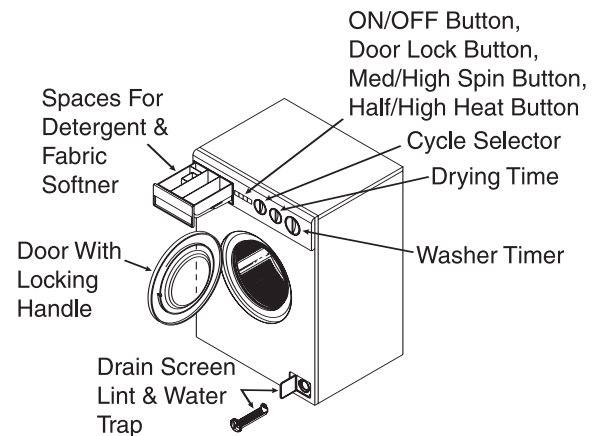
If the blower motor does not spin and the necessary power requirements have been met, use a screwdriver or coin to open the furnace access panel outside of the fifth wheel. Make sure the ON/OFF switch is ON.

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## WASHER/DRYER

This appliance is an automatic washer with a capacity of up to 10 lbs. (4.5Kg) of dry clothing. It is front loading, with an extra large door opening for easier access. It has five wash cycles in addition to extra rinse and extra spin cycles.

- The Washer/Dryer operates on 120 Volt AC.
- To operate the Washer/Dryer you will need to be plugged into shore power.
- The Washer/Dryer water use will be approximately 16 gallons of water.



Before using the washer for the first time, wipe the inside and outside with a damp cloth to remove any travel dust that has accumulated. We recommend operating a rinse cycle to rinse out your washer.

### Operating Instructions

- Sort and pre-treat clothes (specific directions under sorting).
- Add the measured amount of detergent suggested by the package directions (maximum 2 tablespoons).
- Load the clothes loosely into the washer. Close the washer door.
- Turn the cycle selector knob to the desired temperature setting.
- Decide which washing cycle you wish to use. Turn the timer knob clockwise to the desired wash setting.
- Select High or Medium spin (only for regular washing).
- Press the push button ON.
- After the cycle is complete, wait 2 minutes for the door lock to release before attempting to open the door.



**WARNING: Do not wash or dry articles that have previously been cleaned, washed, soaked or spotted with gasoline, dry cleaning solvents or other flammable or explosive substances. They give off vapors that could ignite or explode. Do not add gasoline, dry cleaning solvents or other flammable or explosive substances to the wash water. Do not use heat to dry articles containing foam rubber or similar textured, rubber-like materials. Clean the lint screen if applicable (located on the back of the washer in the top left corner) after each use, and keep the area around the exhaust opening and adjacent areas free from the accumulation of lint, dust and dirt.**

## Appliances & Equipment

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### Cleaning the Drain Screen

The removable drain screen which protects the pump from lint and foreign matter needs to be cleaned periodically. How often will depend on the type of clothes that you wash. Cotton articles cause more lint to collect than nylon articles. Under no circumstance should the drain screen be removed while the machine is full of water. To clean the drain screen, open the service door by pressing on the left hand side. Place a cloth or shallow tray under the drain screen housing, as a small quantity of water may run out. You may find it helpful to first set the machine to spin then remove the drain screen. This procedure reduces the amount of water released. Turn the drain screen counterclockwise and pull the drain screen out. Clean the screen to remove any dirt and lint. To replace the screen, slide it back into the housing and turn it clockwise to secure. Close the service door.

### Cleaning the Washer/Dryer

As you use the Washer/Dryer, occasionally wipe the exterior of the cabinet with a damp cloth or sponge; wipe it dry with a soft cloth. Do not use polish or plastic trim. Clean the interior with 1 cup of chlorine bleach mixed with 2 cups of granular detergent. Run the washer through a complete cycle using the hot water. Repeat the process if necessary. Remove hard water deposits using only cleaners labeled as washer safe. Wipe the inside of the Washer/Dryer door with a soft cloth to remove any moisture. Periodically, a thin coat of paste should be applied to the inner door; especially to the area which is immediately next to the door window. This will protect the door finish from laundry spills and discoloration.

## WASHER/DRYER READY

If the fifth wheel was not ordered with an optional washer/dryer, it will have a washer/dryer preparation package installed from the factory. The washer/dryer “prep” package includes the following items:

1. Color coded water supply lines. A red line for hot; a blue line for cold.
2. An 1 1/2” waste water drain line with threaded cap, p-trap, and an automatic vent cap. This will drain the waste water into the grey water holding tank.
3. A 120 Volt receptacle located in the compartment.



**NOTE: Sidewall dryer vents are not part of the prep package. If a sidewall vent is to be installed, be sure to properly seal vent to sidewall.**

If a washer/dryer is to be installed at a later date be sure to follow all the manufacturer installation instructions. Listed here are further instructions which should be adhered to for safe and reliable operation:

- Do not connect the clothes dryer exhaust duct to any other duct, vent or chimney.
- Do not terminate the exhaust duct beneath the fifth wheel.
- Be sure to use proper length fastener when attaching exhaust vent to exterior sidewall. Stainless steel fasteners are best suited for this as they will not rust.
- If the cabinet or closet in which a washer/dryer is installed does not have vented louvered doors, the manufacturer's installation instructions may require installation of vented doors or vents to be installed in the doors. This is for sufficient circulation of drying.

The gas/electric water heater is designed to operate with a minimum amount of service. The most common problem with electric water heaters result from energizing the heater before it is filled with water.

## WATER HEATER



**CAUTION: Do not operate the water heater unless water covers the heating element. Failure to do so may damage the water heater and void the warranty.**

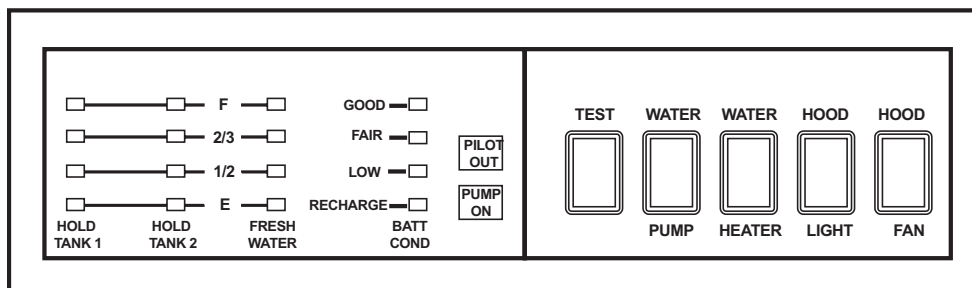
- Using the water heater 120 Volt AC electric element will require that the fifth wheel be plugged into shore power.
- If you have not used your fifth wheel for a while you will need to check your water heater burner tube for cobwebs. Blow out with air, clean or take it to a qualified technician.

The water heater should be used as often as possible on gas.

1. Turn ON the gas supply.
2. Locate the range hood and turn the water heater power switch to the ON position.
3. If the burner does not light the system will automatically attempt two more times for ignition before lock-out.



**NOTE: Each ignition cycle will have a 15 second purge before the spark cycle.**



## Appliances & Equipment

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4. If lockout occurs before the main burner lights turn the switch to OFF, wait five seconds and turn the switch to the 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 line.



**WARNING:** Before operating the water heater, check the location of the vent to make sure it will not be blocked. Do not operate the water heater with the door open.

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### Understanding the Operating System

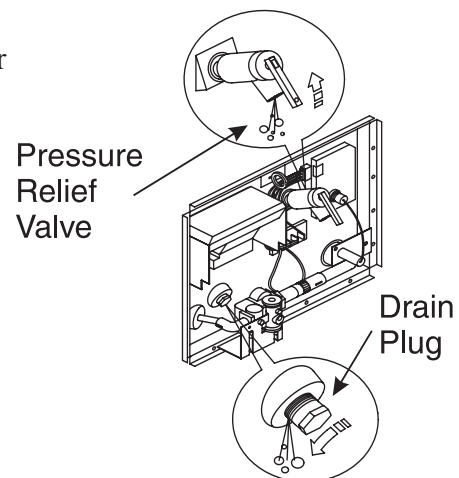
The direct spark ignition water heater must have the correct gas pressure and a DC voltage range between 10.5 Volts DC and 13.5 Volts. This voltage should be supplied directly from the battery or from the filtered circuit of a converter. On a call for heat, voltage is applied to the ignitor across the terminals 1(power) and 6(ground) of the input connector. A high voltage spark is then generated from the spark electrode to the ground. Simultaneously, the gas valve is energized. At the start of each heating cycle there is a 15 second purge followed by a 6.8 second trial for ignition. Sparking ceases as soon as a constant flame is present. If no flame is detected with 6.8 seconds on the first try for ignition, the system will automatically try two more times before going into lockout. Once the flame is established, sparking will cease and the flame rod will provide flame monitoring for the remainder of the heat cycle. If the flame is extinguished during the cycle, it will spark automatically in an attempt to re-establish the flame

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### Draining & Storage Instructions

If the fifth wheel is to be stored during winter months, the water heater must be drained to prevent damage from freezing.

- Turn off the electrical power to the water heater at the breaker.
- Shut off the gas supply to the water heater.
- Turn off the water pump on the water system.
- Open both hot and cold water faucets.



**NOTE:** Be certain to refill the water heater with water and remove all air from the tank and lines before re-lighting or before turning on electrical power.



The temperature and pressure relief valve is designed to open if the temperature of the water within the heater reaches 210°F, or if the water pressure in the heater reaches 150 psi. Recreational fifth wheel water systems are closed systems. During the water heating cycle the pressure build-up in the water system will reach 150 pounds. When this pressure is reached, the pressure relief valve will open and water will drip from the valve. This dripping will continue until the pressure is reduced to below 150 pounds and the valve closes. This condition is normal and does not indicate a defective relief valve.



**Periodically inspect the vent for obstructions or the presence of soot. Soot is formed whenever combustion is incomplete. This is your visual warning that the water heater is operating in an unsafe manner. If soot is present, immediately shut the water heater down and contact your dealer or a qualified service person.**

The water heater by design has an internal air pocket to reduce the possibilities of dripping or weeping.

Expanding of water in time will absorb the air and pocket. The air will have to be replaced utilizing a simply procedure when this occurs.

- Step 1: Turn OFF the water heater.
- Step 2: Shut off the incoming water supply.
- Step 3: Open the closet hot water line of the trailer.
- Step 4: Pull the handle of the relief valve until the flow of water stops.
- Step 5: Allow the relief valve to snap shut, close the hot faucet and turn on the water supply.
- Step 6: Turn on the water heater.

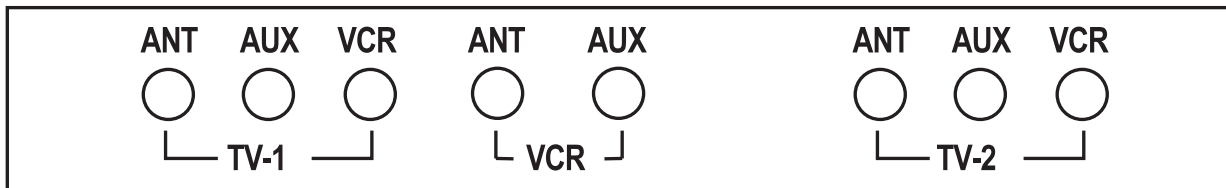
The air pocket will have been re-established and procedure will not need to be repeated until the next discharge of water. If the discharge does not stop contact a qualified service center to evaluate the valve and make any required repairs.



**CAUTION: Ensure the water heater storage tank is cool prior to making any check of the valve.**

## VIDEO SELECTOR BOX

The fifth wheel is equipped with a video selector box located just above the VCR. The selector box receives video and audio signals from three different sources: Roof mounted antenna, shore cable (auxiliary) or the VCR. The video selector box directs the signals to either the front or rear TV, and directs the signal from shore cable or the roof mounted antenna to the VCR. The selector box switches are divided into three groups: TV 1 (front TV), TV2 (rear TV) and the VCR. Both the TV1 and TV2 button groups perform the same functions. Example: To watch the front TV (TV1) from the antenna, depress the ANT button in the TV1 group. This will direct the signal from the antenna to the front TV.



### To Watch the FRONT TV:

- Using the antenna, depress the ANT button in the TV1 group.
- Using the shore cable, depress the AUXILIARY button in the TV1 group.
- Using the VCR, turn the TV to channel 3 and depress the VCR button in the TV1 group.

### To Watch the REAR TV:

- Using the antenna, depress the ANT button in the TV2 group.
- Using the shore cable, depress the AUXILIARY button in the TV2 group.
- Using the VCR, turn the TV to channel 3 and depress the VCR button in the TV2 group.



**NOTE: When watching TV by using the VCR, such as playing a tape, make sure the TV is turned to channel 3.**

### Using the VCR (Optional):

With the antenna, depress the ANT button in the VCR group.  
With the shore cable, depress the AUXILIARY button in the VCR group.

1. If the picture is weak and the antenna boost is working, try moving the fifth wheel a few feet forward or backwards.
2. If it is weak or has no picture, check the video selector box to make sure the proper mode button has been selected.

3. If the signal is still weak, it may be a shorted or open coax. The coax cable is made up of two conductors: A center conductor (which is usually copper) and the ground (which is woven or braided aluminum). There is insulating material that separates the two conductors die-electric. The ground and center conductor are to remain separate from one another. When installing a metal end onto the coax cable, use care so that none of the woven ground strands come in contact with the center conductor. A continuity tester is used to test for a suspected bad coax wire run. Unscrew both ends of the suspected bad coax run, and use the continuity tester to check between the center conductor and outside threaded ring. If continuity is present, the coax is shorted. To test for an open connection of a particular coax run, touch each end of the coaxes ground or center conductor using the tester leads. Continuity should be present. For proper operation there should be continuity from one end to the other of both the ground and center conductor. No continuity should be between the ground and center conductor. Though damage does not usually occur from a shorted or open coax cable, picture quality is compromised.

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The fifth wheel is equipped with a remote control and color television. The TV operates from 120 Volts AC power only, which can be provided by shore power or converter. Viewing time of the front TV from the converter depends on the state of charge of the batteries and any additional 12 Volt DC lighting being used.

**FRONT  
TELEVISION**

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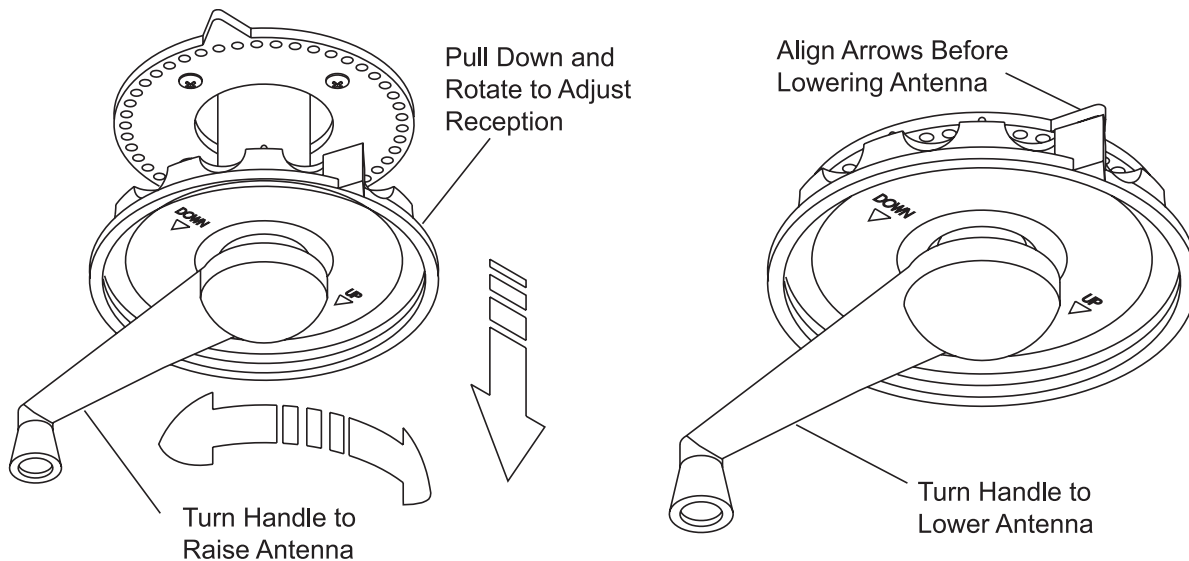
The VCR and bedroom television operate from 120 Volts AC only, which can be provided by shore power or converter. Use the instructions given in the video selector box section to use these components.

**VCR &  
BEDROOM  
TELEVISION**

---

The television antenna is a manual crank up style antenna with built in electronics which uses 12 Volts DC to “boost” signal strength. Weak or fuzzy signals can be amplified by turning on the boost switch. The antenna and booster work together to provide the best possible picture for most situations. Certain conditions occur when no amplification is needed, and in fact, may make the picture worse. The television station will send a signal that resembles waves, like rings from a rock thrown into a still pond. The radiating television signal can bounce back from an object such as a mountain. The antenna will receive a signal from the initial pass, then receive an additional signal from the rebound resulting in a split or double image. In this case the picture may be improved by no amplification, or even by lowering the antenna.

**TELEVISION  
ANTENNA**



**NOTE:** Do not move the fifth wheel with the antenna in the raised position. The antenna can be damaged by tree limbs or wires.



**WARNING:** Before raising the antenna, make an outside visual inspection for any obstructions or overhead electrical wires. Damage to the antenna, severe shock, personal injury or death can occur.

- **To Raise The Antenna:**

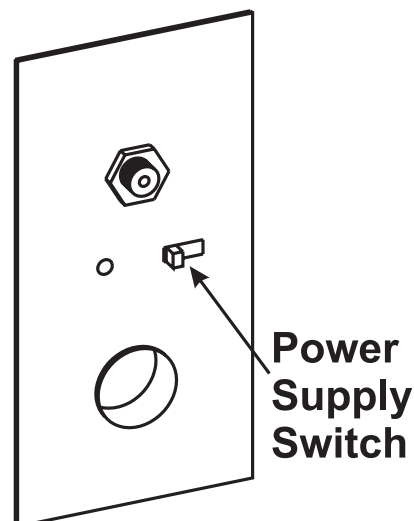
Rotate crank handle clockwise to raise (approximately 14 1/2 turns). Pull down on outside directional wheel and rotate antenna until the best picture is viewed. The direction wheel is spring loaded.

- **To Lower The Antenna:**

Pull down on the directional wheel and align arrows together. Rotate crank handle counter clockwise, lowering antenna fully into the cradle. Make an outside visual inspection to ensure the antenna is properly stowed.

- **Boost Operation:**

To boost the antenna signal to the TV or VCR, use the boost switch. Turn the switch to the ON position. Turn the boost switch OFF when not in use.

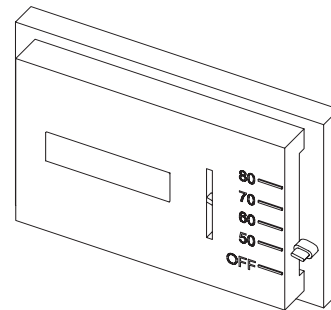
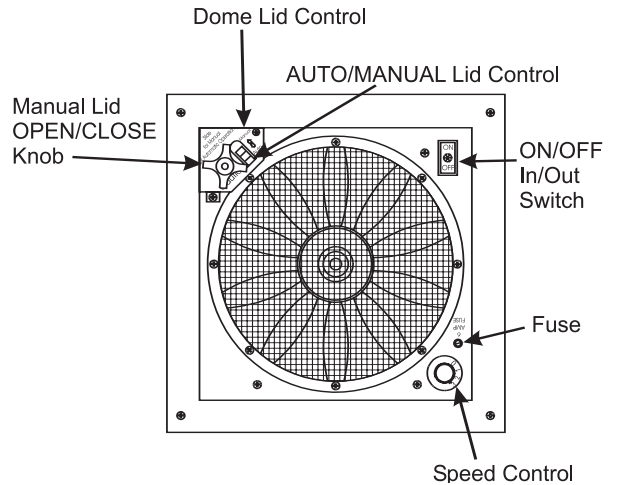


**GALLEY FAN**

The galley fan is a 3 speed fan with a on or off position. The fan is bi-directional for intake or exhaust air movement. The fan lid is manually or automatically slide control located on the fan. When the lid is partially raised, the fan motor will be allowed to operate.

**To Operate the Fan:**

- When in manual setting, set idle control to Auto or Manual operation.
- Set fan direction I=IN or O=OUT.
- Set desired fan speed:
  - O = OFF.
  - 1 = LOW.
  - 2 = MEDIUM.
  - 3 = HIGH.
- Set thermostat to desired setting. When activated, fan blade turns on as dome opens past approximately two inches. Dome will not cycle down and up as interior temperature decreases and increases.



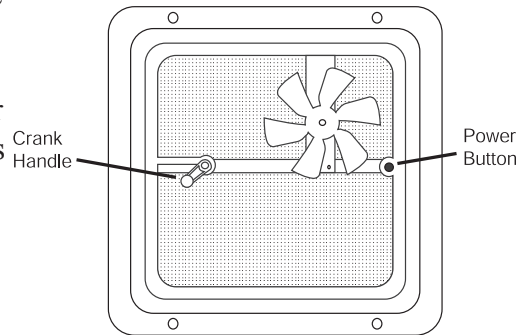
**NOTE: Let fan come to a complete stop before changing fan direction.**

1. To help keep condensation from accumulating, open the vent fan lids slightly. This will help the air to circulate. Condensation naturally occurs from the fluctuation of interior and exterior temperatures, humidity and dew point changes, and from cooking or large amounts of water boiling on the cooktop. Shower usage is another culprit of condensation.
2. If the fan fails to operate, check for a blown fuse either in the domestic fuse panel or the 6 amp fuse on the fan.

*Tips*

## **AIR VENT (BATHROOM)**

Your fifth wheel is equipped with roof air vents. To open or close vents, turn the crank handle. To operate the power air vent, crank open the vent and push in the power button or use wall switch. The fan is for ventilation only, it will not help cool the fifth wheel. To close the power air vent, push in the power button to stop the fan and close the vent.



---

## **AWNING SLIDE-OUT**

The fifth wheel is equipped with a slide-out awning that will automatically roll out with the slide room when it is extended. When the slide room is extended the awning can then be rolled out completely as a window awning. The slide-out awning has two devices to help prevent the awning from “billowing” while traveling. The first device is a pair of anti-billow studs, which are located above each end of the awning roller tube. If the awning catches wind and begins to billow, the awning metal wrap will contact the anti-billow stud levering downward and engaging with a plastic gear, preventing further unraveling of the awning material. The second device uses two metal wind deflector which are positioned just below the awning. This helps prevent side winds from scooping under the awning and unwinding the awning material.



**CAUTION:** The slide room and slide-out awning should be retracted during heavy winds or rain. Rain can be driven under the slide-out awning and forced into the fifth wheel. The slide-out awning should be retracted in high wind conditions as damage may occur to the awning or fifth wheel.



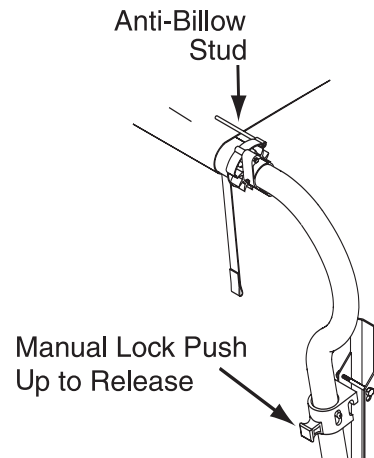
**NOTE:** At least five feet of clearance is needed between the side of the fifth wheel and slide-out awning to be fully extended.

### **To Extend The Awning:**

Follow the instructions for extending the slide-out room. With awning pull rod, unlock travel latches located on the awning side arms. Find the center awning pull strap located between the two metal wind deflector. Use the awning pull rod to hook the center pull strap loop. With a firm grip, use the rod to pull down on the strap until the strap is within reach. Carefully grasp the pull strap and secure pull strap loop to the hook located on the side of the fifth wheel. Secure the straps located at each end of the awning to the hooks provided on the fifth wheel.

**To Retract The Awning:**

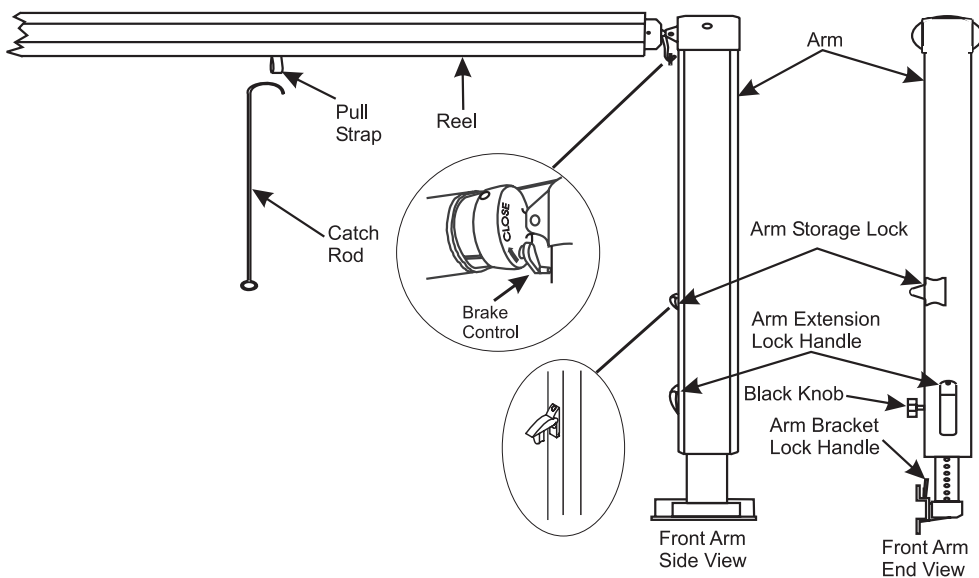
Remove any leaves or debris that may be present by carefully tapping awning canvas with round end of awning pull rod. Remove awning end straps from the hooks. With awning pull rod in one hand, use the opposite hand (with a firm grip) to remove the center pull strap from the hook. Pull down on strap and engage end of rod with loop in pull strap and carefully, let the spring tension roll the awning up. Do not allow the awning to snap back into position as this may damage the awning or the fifth wheel. Awning material should roll up evenly with the center pull strap located between the two metal wind deflectors. Latch awning side arm travel locks with the awning pull rod.



**To Extend Patio Awning:**

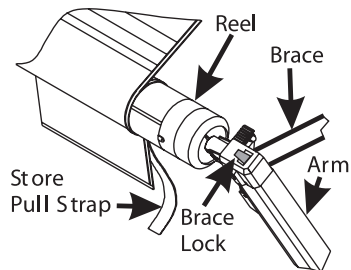
- Have someone help you extend awning, if possible.
- To extend awning loosen black brace locking knobs located on inside lower front and rear braces. Failure to loosen black knobs will prevent awning from fully extending.
- Lift and move arm storage locks, top handle on front and rear arms, all the way up to unlocked position.
- Using catch rod, move brake control lever to “OPEN” position.

**AWNING-PATIO**



## Appliances & Equipment

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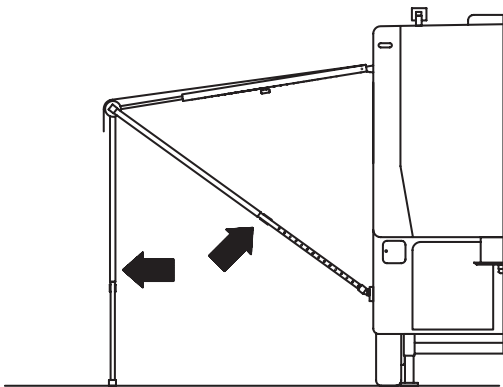


- Hook loop of pull strap (located in center of reel) with catch rod and draw awning, reel assembly and arms all the way out away from fifth wheel. Hold awning out and have someone push both front and rear braces (attached to black knobs) all the way out to reel end of arms. Lock braces in place.
- Tighten black locking knobs. Braces that are left in down position or not locked to reel end of arms will allow awning to retract inadvertently.
- Slide center pull strap to one end of awning and store.
- Raise arm extension lock handles, located on bottom of front and rear arms, all the way up to unlocked position. Extend arms up to position awning at desired height and lower lock handles to secure arms.

---

### Using Carport Feature

In order to use carport feature safely, braces must be extended and locked to end of side arms and black knobs tightened.



Swing Arm Outward to Set the Carport

- Extend awning as described under “To Extend Awning.”
- Unlatch bottom of rear arm by pushing in on lock handle on arm bracket and swing arm away from fifth wheel to an upright position.
- Raise rear arm extension lock handle all the way up to unlocked position, extend arm to position awning at desired height and lower lock handle to lock arms in place. **Drive stakes through bottom holes in arm.**
- Unlatch bottom of front arm by pushing in on lock handle on arm bracket and swing arm away from fifth wheel to an upright position.
- Raise front arm extension lock handle all the way up to unlocked position, extend arm to position awning at desired height and lower lock handle to lock arms in place. **Drive stakes through bottom holes in arm.**
- To move awning out of carport position, reverse above steps.

---

### Securing Awning For Travel

Before travel, check the following:

- Awning is fully retracted to side of fifth wheel.
- Black locking knobs are tightened.
- Storage locks are down in locked position.
- Brake control is in full down (locked) position.
- Bottom of front and rear arms are latched properly into bottom brackets.
- Catch rod is stored away.





**CAUTION: Awning is under extreme spring tension when extended. If pull strap is released quickly or let go completely, awning will abruptly roll up to stored position and can cause bodily injury or damage to awning.**

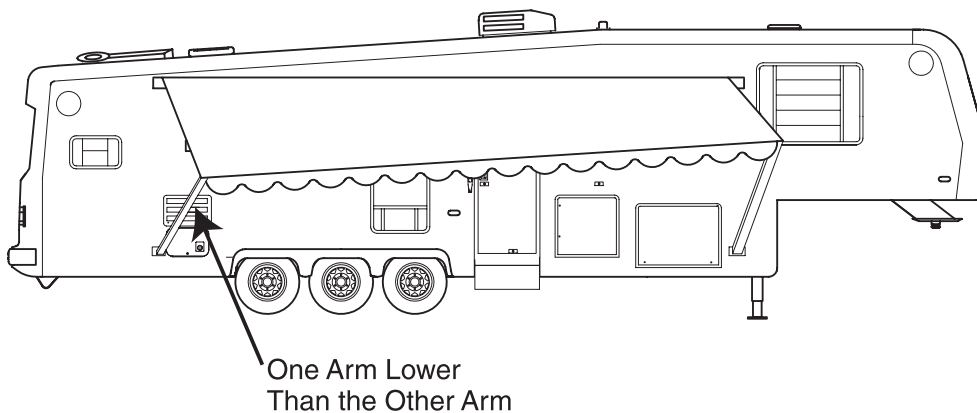
- Have someone help you retract awning, if possible.
- If applicable, move awning out of carport position (see “Using Carport Feature”).
- Retract arms to lower awning until arms rest on lower stop bolts and lock in position.
- Position pull strap in center of reel.
- Hold pull strap and have someone loosen black knobs and lower braces all the way toward fifth wheel; do not tighten black knobs.
- Pull down slightly on pull strap, have someone release slide brake and allow awning to roll up to stored position.
- Lower arm storage locks, top handle on front and rear arms to lock awning in place.
- Tighten both front and rear black knobs.
- Using catch rod, move brake control lever to “CLOSE” position.
- Give pull strap a quick tug to double check that roller is in locked position.

*To Retract Awning*

After you have extended awning you can choose to position it in rain release position. This position may reduce water build up on awning.

*Rain Release Setting*

- To position awning, lower one arm of awning and leave other arm in normal position. This will create enough of a slope for adequate water run off.



## ***Appliances & Equipment***

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### *Washing*

On a monthly basis, loosen hardened dirt and remove dust from the awning with a dry, medium bristle brush. Thoroughly rinse both the top and bottom with a hose. Wash both sides of the awning with a quality vinyl cleaner solution using an awning brush. This process can be made easier with awning maintenance products. Saturate the fabric with the solution and leave it on for 15-20 minutes. If necessary, reapply the solution to keep the fabric saturated. Rinse the awning thoroughly. Repeat, if necessary, until most of the stains disappear.

---

### *Water Leaks*

If leaking occurs after washing, it usually is a result from insufficient rinsing. If water drips through the needle holes in the stitching, use a commercial seam sealer which is available in canvas and trailer supply stores.

Paraffin wax may be applied to the top of the seams. As the awning “weathers,” these holes will normally seal themselves.

It is normal for slight leakage to occur through the fabric where water is allowed to accumulate or pocket on the fabric. See “Storm Precautions” for information on the awning settings for proper water drainage. Sometimes soap or chemical residue, such as from active agents in select fog or sprays, can “wet” fabric so that it appears unable to repel water. Rinse the fabric thoroughly and test to see if it is water repellent after it dries. If leakage continues after repeating the washing and thorough rinsing, please contact Carefree Awning Magic concerning further maintenance.

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### *Storm Precautions*

The warranty does not cover damage caused by acts of God; therefore, steps should be taken to prevent damage from occurring due to wind, rain or storms. If you are leaving or retiring for the night, close the awning. This takes only a few seconds and it gives the best protection for the awning. If unable to close the awning, lower both ends of it as far as you can. This will create a sufficient slope for water run-off. One end may be lowered to sufficiently divert the water if the awning is monitored.

Water weighs 8.33 pounds per gallon. The awning was not made to withstand the 500 to 700 pounds that could accumulate. It is best not to subject the awning and the fifth wheel to needless strain.

If your trailer contains a dining table and 4 chairs (instead of a booth dinette), chairs are either all folding or 2 folding and 2 non-folding chairs. Tie down chairs securely so that it is not possible to sit in any chairs when traveling.

**SECURING  
DINETTE  
CHAIRS FOR  
TRAVEL**



**WARNING: Do not occupy any of these chairs while trailer is in motion. Chairs are not equipped with occupant restraint systems. In addition, chairs must be stored in an enclosed area or secured with tie-down straps, prior to setting trailer into motion, to avoid the risk of personal injury to towing vehicle occupants resulting from a crash or sudden stop.**

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Lift dinette table off pedestal legs. Remove legs from bases and store them. Lay table on seat ledges and spread cushions out to form a mattress. To return dinette to its original position place pedestal legs into bases and place table onto pedestal legs.

**TO CONVERT  
DINETTE INTO A  
BED**

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Grab front edge of sofa under cushions and pull up and out. Sofa will extend into a fold-out bed. To return bed to sofa position, lift up on the end of bed and push in.

**TO CONVERT  
SOFA INTO A  
BED**



# **A** LUMASCAPE

FIFTH WHEEL

## **SECTION 4 WATER SYSTEMS**

**INTRODUCTION • 87**

**MONITOR PANEL • 87**

**FRESH WATER SYSTEMS • 87**

*Water Tank - Fresh tank fill*

*Water - City Water Hookup*

*Water Pump*

*Water Filter*

*Shower - Exterior*

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*Disinfecting*

**WASTE WATER SYSTEM • 90**

*Proper Waste Disposal*

*When Connected to Sewer Hookup*

*Toilet Operation*

*Cleaning*

*Service Tip*

*Drain Traps*

*Draining the Holding Tanks*

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**COLD WEATHER USE • 94**

*Winterizing With Air Pressure*

*Winterizing Using Nontoxic Antifreeze*

*Winterizing A Washer/Dryer*



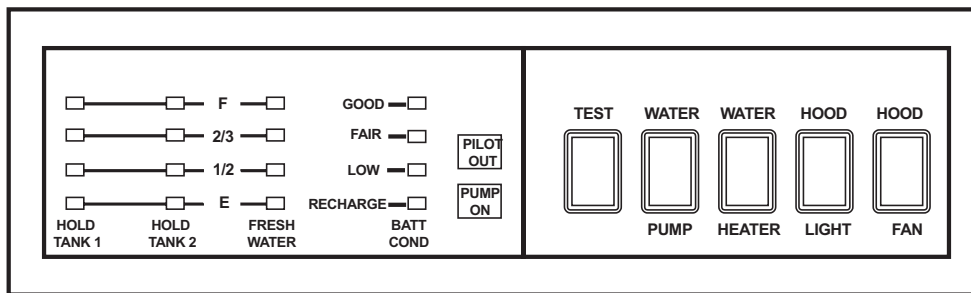
**INTRODUCTION**

It is hard to imagine how much water you use everyday when you are at home. Newcomers to self contained fifth wheel soon discover that water does not last long unless consumption is drastically reduced. For instance, you can use less water for showering if you wet down, turn off water while soaping, turn on the water to rinse. This way a good shower uses a gallon or less of water. There is plenty of water to meet your needs once you adjust your habits.

There are two different water systems in your fifth wheel: fresh water and waste water. The fresh water system consists of a fresh water tank, water pump, water heater, filters (if so equipped) and a city water connection. The waste water system consists of: a waste holding tank (gray water), sewage holding tank (black water), toilet and drains.

The monitor panel is located on the range hood. The water pump is controlled by the ON/OFF switch. The fresh water tank and holding tanks levels are checked by pressing the "TEST" button. Level lights will be lit to indicate tank levels on the left side of panel.

**MONITOR PANEL**



Locate the access on the roadside of the fifth wheel. Using a clean hose, fill the fresh water tank. There are two ways to tell when the tank is full: by using the monitor panel inside the fifth wheel or by watching the overflow from the fresh water tank. Once the water starts to come out the overflow tube, shut water supply off as quickly as possible.

**FRESH WATER SYSTEMS**  
*Water Tank - Fresh Tank Fill*

POTABLE WATER ONLY  
SANITIZE, FLUSH AND DRAIN  
BEFORE USING. SEE INSTRUCTION MANUAL.



WATER TANK FILL



*Water - City Water*

## Water Systems

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### Hookup

When connecting your fifth wheel to city water, be sure to use a water hose manufactured and labeled potable water (to insure the hose will not flavor the water). To hook-up to the city water, connect one end of the hose to the city water connection located on the roadside of the fifth wheel. Open the access door, connect the hose the adapter. The other end of the water hose will need to be hooked to a water source. It is recommended that you install a pressure regulator in the water line.

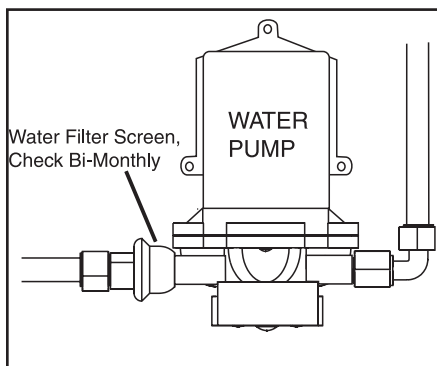


**CAUTION:** Some water sources develop excessive pressure, particularly in mountainous regions. Excessive pressure is anything over 55 psi (pounds per square inch). High pressure can cause leaks in water lines and/or damage the water heater. Water pressure regulators are available to protect your camping vehicle system from high pressure.

### Water Pump

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A water pump is used to pressurize the fresh water system when it is not connected to city water. The water pump is totally automatic and self-priming; operating on demand when water is used.



Turn the pump on by pushing the switch on the monitor panel and wait for the water lines and the hot water tank to fill. Close each faucet when it delivers a steady stream of water (cold water first). The pump is now ready for automatic operation. It will start when a faucet is opened and stop when the faucet is closed. Do not allow the pump to run when fresh water supply tank is empty. Continued operation with a dry tank may open a circuit and/or damage the pump.



**WARNING:** Before leaving your fifth wheel for extended periods of time (e.g. overnight or longer), be sure that the city water and all water pumps have been turned off. Damage from neglect will be the responsibility of the owner and not Holiday Rambler.

### Water Filter

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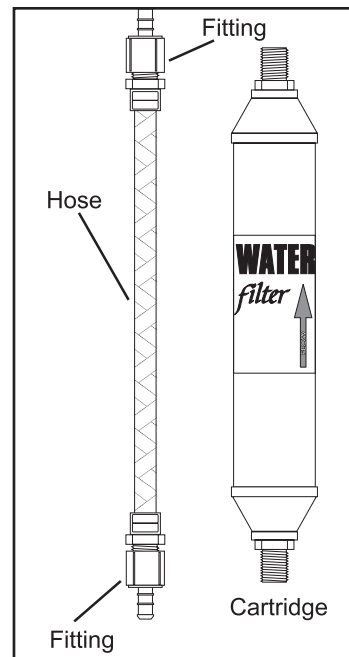
Your fifth wheel is shipped with a hose in place of the water filter. To install or replace water filter:

- Remove top and bottom fittings from either the hose or filter.
- Connect top and bottom fittings to the filter to purify the system.
- Store hose for use when winterizing water system.

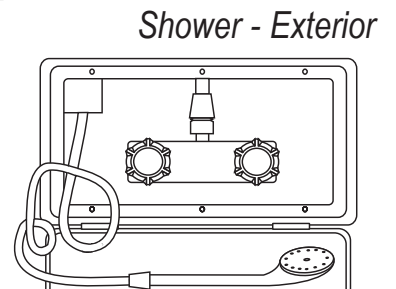
You will know a fresh replacement cartridge is needed when the flow of water from your faucet becomes too slow for convenience. How often will this occur? That depends on how cloudy your unfiltered water is and how much water you use. Each time water passes through the water filter



dirt particles are trapped and held in the tiny pores of the micro-pure coating on the filtering element inside the cartridge. As the cartridge actively removes the impurities from the water, microscopically small pores slowly fill up and the amount of water flowing from the cartridge lessens. When the flow of water from the water filter becomes too slow for convenience it should be serviced. If the cartridge is not changed, eventually the flow will stop entirely. Even when a decreasing flow does not demand it, at least one cartridge change a year is recommended for reliable performance from your Everpure Water Purification System.



Exterior shower is located on roadside of fifth wheel. It is equipped with both hot and cold water faucets. To operate shower turn on faucets. Shower will work from both fresh water tank and city water hookup. Adjust temperature of shower by adjusting hot and cold water faucets. You can adjust shower spray on back of shower head. When you are not going to use the shower for a time be sure you let water drain out of water hose (to protect hose in cold conditions).



Disinfecting the water system with chlorine bleach (super chlorination) protects you and your family from bacteriological or viral contamination from any common water source.

### **WATER SYSTEM** *Disinfecting*

You should disinfect the water system if your fifth wheel is **new** or has not been used for at least **one month**. Use the following procedure to disinfect water system **every 3 months**.

- Prepare a chlorine solution using 1 gallon of water and 1/4 cup of chlorine bleach (sodium hypochlorite solution). Use 1 gallon of solution for every 15 gallons of tank capacity.
- Example: Add 2-2/3 gallons of solution to a 40 gallon tank. Add 4-2/3 gallons solution to a 70 gallon tank. This mixture puts a 50 ppm (parts per million) residual chlorine concentration in water system. This concentration will act as a quick-kill dosage for harmful bacteria, viruses and slime-forming organisms. Concentrations higher than 50 ppm may damage water lines and/or tanks.

- Fill the tank with fresh water. Open each faucet in turn and run the water until you smell a distinct chlorine odor. Do not forget the hot water taps or the tub and shower faucets.
- Allow the system to stand for four hours when disinfecting with a 50 ppm solution.
- Drain the system and flush with fresh water. Flush with fresh water repeatedly, if necessary, until no chlorine taste or smell is left in the water system



**NOTE: To perform this task you will need an independently operated water pump (with garden hose connections) and a container to hold the prepared solution.**

## WASTE WATER SYSTEMS

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The waste drainage system was designed to provide adequate and safe storage and/or discharge of waste materials. All materials used in fabrication and installation of the system are tested by a nationally recognized testing laboratory. The entire fabricated waste system is factory tested in accordance with the American National Standards Code A119.2. The drainage system uses ABS plastic piping and fittings connected to the sinks, shower, toilet and holding tanks. It provides for their drainage to an outside termination. The fifth wheel should be reasonably level for the best operation of the system. There are three separate systems: two for waste water (gray water) and one for sewage waste (black water). Each one has its own control valve and empty through the sewer drain hose. When traveling, we recommend the holding tanks be empty or less than half full.

### *Proper Waste Disposal*

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Most states and parks have strict regulations about discharging wastes, except into authorized disposal systems. Dumping raw sewage from toilet holding tanks except at authorized dumping stations, is universally prohibited. Illegal dumping along roadsides, by a minority of recreational vehicle users, has resulted in tough laws and has unfairly labeled all camping vehicle trailers as unwelcome in some areas. Most national, state and private parks have either a central dump facility or a campsite hookup for sewage. You will find a list of dumping stations from coast to coast in Woodalls Campground Directory, Trailer Lifes RV Campgrounds and Services Directory, Rand McNallys Campground and Trailer Park Guide, Good Sam Park Director (Good Sam Club) and other RV publications. Some major oil companies offer dump facilities at selected stations. Plan ahead and you will find few inconveniences in proper and legal disposal of holding tank waste.

- Do not flush facial tissues. They are treated chemically to give them wet strength and they will not dissolve like toilet paper. Special holding tanks tissues are available at most RV supply stores. Also, white toilet paper dissolves faster than colored paper.
- Do not use strong detergents or full strength bleach to deodorize and disinfect. Use odor control chemicals made especially for holding tanks.
- Do not put automotive antifreeze, ammonia, alcohol or acetone in holding tanks. Some chemicals will dissolve plastic.
- Do not put large table scraps in tanks. They could get stuck or damage valve seals.



**CAUTION: Do not use any products that contain petroleum or ammonia in place of an RV odor controlling chemical. Petroleum and ammonia will damage ABS plastic holding tanks and seals.**

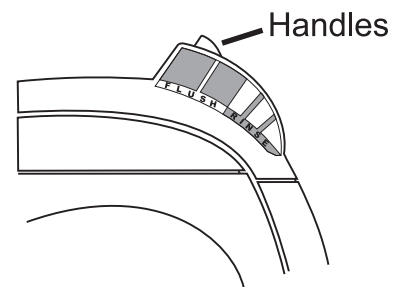
Keep the holding tank (black water) valve closed at all times, except when dumping. Waste holding tanks (gray water) can remain open to drain when parked. Connect the drain hose to the sewer hookup. Before emptying, be sure there is enough liquid in the tanks to provide a smooth flow through the valve and drain hose. Sufficient liquid in the tank causes a swirling action that should take with it accumulated solid wastes. Empty the tanks when they are 1/2 to totally full.

*When Connected to  
Sewer Hookup*

The toilet operates from either the fresh water tank or the city water supply. The water pump must be turned on or city water connected. The toilet flushes directly into the black water holding tank.

*Toilet Operation*

- To add water to bowl pull forward on rinse handle.
- To flush toilet pull forward on flush handle until water swirls.
- Water is retained in bowl from using a sealing blade attached to flush handle. If sealing blade does not move freely after extended use apply a light film of silicone spray on blade. If toilet water is running, blade could be partially open or sealing groove of blade could be clogged. Clean sealing groove being careful not to damage rubber seal.



**NOTE: Holding the flush lever down longer than necessary results in excessive water usage.**

## Water Systems

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### Cleaning

The toilet should be cleaned regularly for maximum sanitation and operational efficiency. Clean the toilet bowl with a mild bathroom cleaner. Do not use chlorine or caustic chemicals such as drain opening types. They will damage seals.

- Clean out the system by flushing several gallons of fresh water through with one cup of dry laundry detergent.
- Add odor control deodorant, in the amount specified for your holding tank capacity, after cleaning and every few days during use.

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### Service Tip

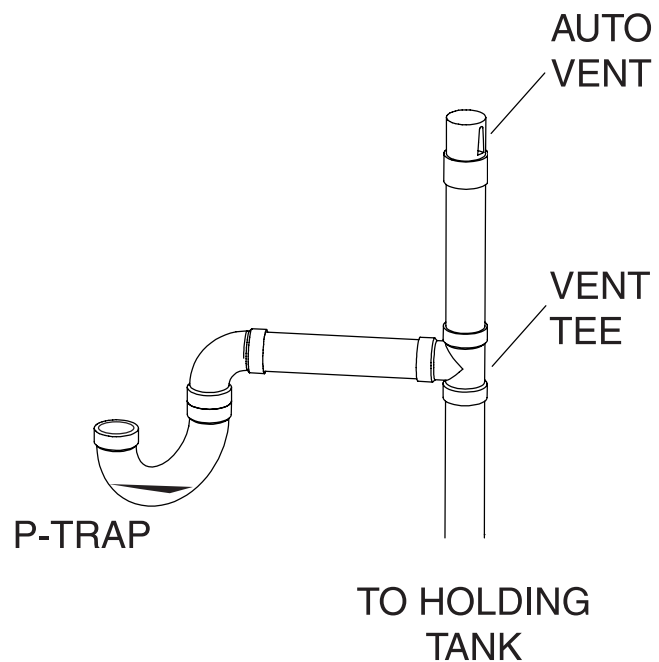
To find leaks check behind or under the toilet. Take four or five sheets of toilet tissue and wipe all seams and waterline connections. Start at the top of the unit and work downward. When the tissue comes in contact with leaking water it will immediately change texture.

---

### Drain Traps

Sinks, showers and clothes washer drains incorporate a water trap or P-trap and auto vents to prevent waste water holding tank odor from entering the fifth wheel. These P-traps, for the most part, are usually within 54 inches of a vent tee. These traps must have water in them to block odors. During storage water can evaporate and allow odor into fifth wheel.

If odor is detected, run water into sinks, shower and clothes washer to fill drain traps. The auto vent by design is to assist in the flow of water in the drain lines. They enable a smooth flow of water in the drain without creating vacuum pressure in the lines. The auto vent, if stuck in the open position, can allow grey odors to enter the fifth wheel. These auto vents also double as clean outs in the event you have to snake out a line.

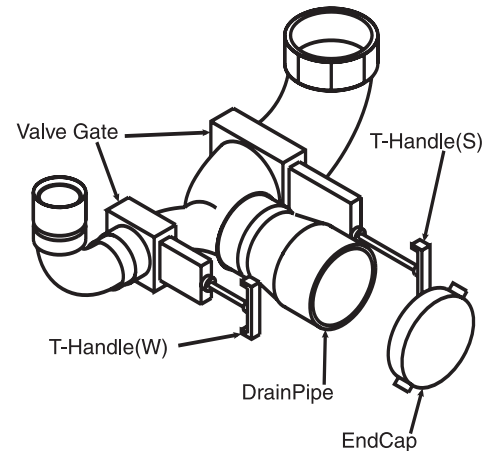


*Draining the Holding Tanks*

The holding tank drain valve handles and the drain termination is located on the roadside of the fifth wheel. The sewer hose is stored in a storage tube that is located on the roadside of the fifth wheel. Drain the SEWAGE (black) tanks first and then the WASTE (gray) tank. By using this sequence the sewage will be flushed out of the drain system and sewer hose by the waste water.

**To drain:**

1. Remove the sewer hose from the storage tube.
2. Check that all three drain valves are in the closed position.
3. Remove the safety cap from the drain termination.
4. Connect the sewer hose to the drain termination by attaching the hose coupling to the drain termination and turning it 90° allowing the tabs on the hose coupling to lock onto the tabs on the sewer termination.
5. Place the discharge end of the sewer hose into the sewer connection and then check that all the connections are secure to prevent accidental spillage.
6. Open the larger black water drain valve first by pulling the handle out until it stops. After the tank has been drained, open the two smaller waste water drain valves. This will help flush solid waste through the drain hose. After the tanks have been flushed out, close both valves by PUSHING the handles back in.
7. Disconnect and rinse out the sewer hose and replace the termination safety cap.



**NOTE:** Periodically, after the tanks have been emptied, it is recommended to flush out each tank with fresh water to dislodge solids. To clean the holding tanks add a detergent solution to the tanks after draining. The agitating action from driving will clean the tanks.

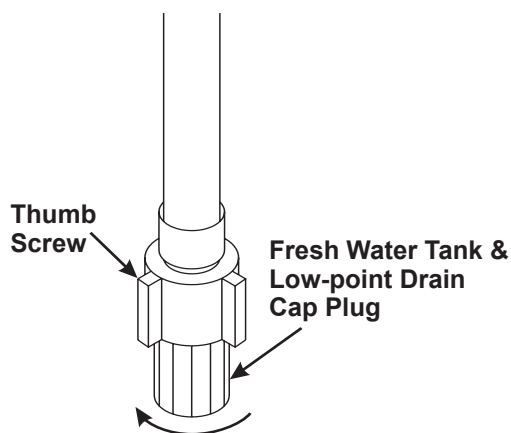
TANK CAPACITIES												
	26RKS	26RKD	27SKS	29RKS	30RKD	32SKS	33SKT	34RKD	34SKT	34CKT	30RL	36RT
Grey	40/40	40	40	40/40	40/40	40/40	40	40/40	40/40	40/40	40/40	40/40
Black	40	40	40	40	40	40	40	40	40	40	40	40
Fresh	50	50	50	50	50	50	50	50	50	50	50	50

**TANK CAPACITIES**

## COLD WEATHER USE

Your fifth wheel was not designed for extended use in below freezing (32°F/0°C) weather. However, you may not experience any problems as long as the temperature doesn't fall too low. Interior water lines, fixtures, water storage tanks and pumps are normally protected from moderate freezing temperatures as long as the furnace operates. Exposed drains may freeze quickly. If you are in doubt about what temperatures your fifth wheel will tolerate, winterize with a potable antifreeze.

### Winterizing with Air Pressure



Using air pressure to winterize your trailer water system will require access to an air compressor and an adapter to connect air line to the water system. Adapters can be found at RV supply stores. Do not exceed 40 pounds psi when hooked to water lines. Higher pressures may damage water lines.

1. Open fresh water tank (one used) and low-point drains. Drains are located underneath trailer. Remove cap plugs (two used) to drain water from hot and cold water lines.
2. Let all water drain. Turn on pump and allow it to run for 30 seconds to 1 minute so that all water is cleared out of pump. Pump switch is located on range hood.
3. Remove water heater drain plug and open pressure release valve located in water heater outside compartment.
4. After you have drained water from trailer hook an air hose to city water hook-up outside roadside next to outside shower. Blow out water lines until no more water can be seen coming out of drain lines. Do not exceed 40 psi in water lines.
5. Open water heater bypass valve located next to water heater.
6. Replace water heater drain plug and close pressure release valve.

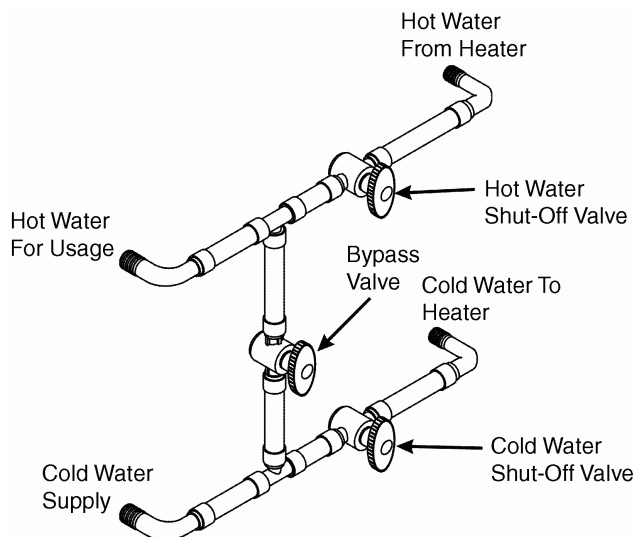
Open all faucets (including outside shower) one at a time while air

is on, to clear water from faucet supply lines. Do not forget to drain your inside shower.

7. Hold toilet flush handle until water has stopped running.

8. Unhook air hose.

9. You will need 1 gallon of RV antifreeze to protect various water lines in your trailer. Pour 1 pint in both kitchen and bath shower drains, 2 pints go in bath sink drain with some of antifreeze going to gray tank to protect drain valve. While holding down toilet flush open pour another 3-1/2 pints into toilet letting antifreeze run into black tank to protect valve located there. Pour last 1/2 pint of antifreeze into toilet after you



- have released flush pedal. use a soft cloth to wipe out sinks and showers after you pour in antifreeze to protect surfaces from stains.
10. Leave low-point drains open until you are ready to use your fifth wheel again.



**WARNING: Before draining low-point drain lines, and water heater verify water is not hot. Hot water from lines can burn you.**



**WARNING: You should only use non-toxic RV antifreeze that is specially made for potable water systems. Automotive antifreeze if ingested, can cause blindness, deafness or death.**

- 
1. Drain the fresh water tank, water heater tank, holding tanks and fresh water lines by removing the fresh water tank cap and water heater drain plug.
  2. With the water pump ON open all faucets and hold toilet flush open for 20 seconds.
  3. Close all faucets and reinstall drain plugs.
  4. Close the water heater bypass valves, located near the water heater. You do not want any antifreeze going into the water heater.
  5. Pour 10 gallons of nontoxic (potable) winterizing antifreeze into the fresh water tank.
  6. Turn on the water pump and, starting with the fresh water faucet farthest from the water tank, open both hot and cold faucets (one at a time) until the antifreeze flows through. Let enough antifreeze drain so water in each P-trap is replaced with antifreeze.
  7. Repeat this procedure at each faucet and toilet.

*Winterizing Using  
Nontoxic Antifreeze*



**WARNING: You should use only non-toxic RV antifreeze that is specially made for potable water systems. Automotive antifreeze, if ingested, can cause blindness, deafness or death.**



**CAUTION: It is recommended that this procedure be done by a qualified RV service technician familiar with fifth wheel such as your authorized selling dealer.**

## Water Systems

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### Winterizing A Washer/Dryer

To winterize your washer/dryer, follow instructions below to avoid damage to your fifth wheel due to freezing.



**NOTE: With washer/dryer turned off, remove washer filter. This will allow water remaining in pump and drain hose to be evacuated. Replace filter. Close inlet shutoff valves (provided by installer) and disconnect inlet hoses.**

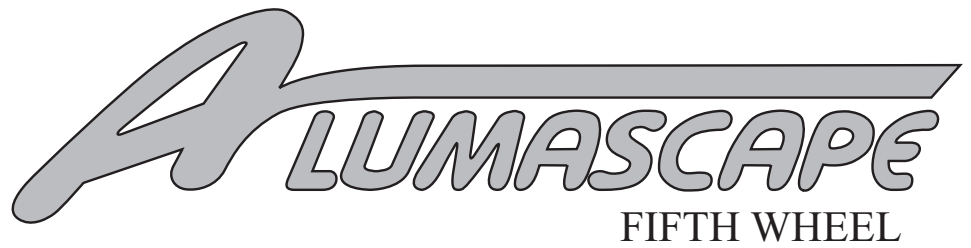
If antifreeze is being used in system follow these instructions:

1. When putting antifreeze into water system of your fifth wheel, set washer to a warm/warm fill setting and allow water to flow into washer until antifreeze is detected.
2. Slowly advance timer to a rinse cycle and allow water to flow for ten seconds.
3. Advance unit to a spin cycle to remove majority of water from washer.
4. With washer/dryer turned off, remove washer filter. This will allow water remaining in pump and drain hose to be evacuated. Replace filter.
5. If you elect, you may close inlet shutoff valves (provided by installer) and disconnect inlet hoses.
6. Any water remaining in unit should contain antifreeze and be protected from freezing.



**NOTE: When placing unit back into service allow unit to operate for one complete cycle before doing laundry to ensure all antifreeze has been purged from unit.**





## **SECTION 5 LP-GAS SYSTEMS**

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<b>LP-GAS DETECTOR • 100</b>
<i>Operation</i>
<i>Testing</i>
<i>Alarm</i>
<i>Alarm Mute</i>
<i>Care of Your Detector</i>
<b>LP -GAS TANK FILLING • 102</b>
<b>LP-GAS VALVES • 102</b>
<b>LP-GAS REGULATOR • 103</b>
<b>LP-GAS CONSUMPTION • 104</b>
<b>LP-GAS DISTRIBUTION LINES • 104</b>



## INTRODUCTION

Components for the fifth wheel LP-Gas systems are approved for use in camping vehicles by a nationally recognized testing laboratory. When properly handled, LP-Gas is a clean-burning dependable fuel for heat producing components. The LP-Gas tank mounted on your fifth wheel contains liquid petroleum gas under high pressure. As fuel is used, liquid gas vaporizes and passes through the tank valve to a regulator that automatically reduces pressure. Low pressure gas is then distributed to components through a pipe manifold system. Component lighting problems are commonly caused by an improperly adjusted gas regulator. Never attempt to reset the regulator yourself. Have your dealer or an authorized service person make adjustments. In high altitude or extreme cold weather (10°F/-12.2°C or lower) you may experience a shortage of LP-Gas. You can adjust to this by not running more than one component at a time, such as turning off the furnace while using the range. If you are going to be in higher altitude or cold climates for a long period of time, an authorized service technician can adjust your LP regulator for these conditions.

We recommend that you have the LP-Gas system checked by an authorized dealer at least once a year, and after every extended trip. Although the manufacturer and dealer both test carefully for leakage, travel vibrations could loosen fittings. Leaks can be easily found by applying a leak detector solution at the connections. If a leak detector solution is not available, a soapy water solution made with dish soap can be used. Tightening fittings usually stops any leaks. If not, shut off the main gas valve at the tanks and see your authorized dealer for repairs immediately. Hand tighten the tank valves only. Do not use a wrench or pliers as over tightening may damage valve seals and cause them to leak. If you have a leak identifying odor (smells like rotten eggs or sulfur), or suspect leaking gas, never light a match or have an open flame.



**WARNING: Fire or explosion from ignited gas or gas fumes can cause serious injury or death.**

Shut off all LP-Gas tank valves when the fifth wheel is not in use. Because of the introduction of DSI boards in appliances, it is very important to shut off all LP-Gas tank valves, pilot lights and appliances. Disable igniters (see Operating Instructions in Section 3) during the refueling of the tow vehicle and filling the LP-Gas tanks to prevent a fire or explosion. If you smell gas (a rotten egg or sulfur smell) at any time perform the following steps immediately:

- Turn off the main gas supply.
- Do not touch any electric switch.
- Extinguish any open flames.

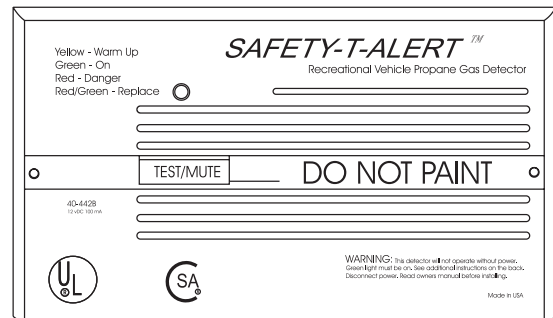
- Open the windows and doors.
- Do not light any appliance.
- Exit the fifth wheel and contact a service center or a gas supplier.



**WARNING: Do not transport or store LP-Gas tanks, gasoline or other flammable liquids inside the fifth wheel. If this warning is ignored, a fire or explosion could result. If you are storing LP gas tanks that are not connected to a LP-Gas system, install an approved plug in the tank outlet holes to prevent leaks. Do not store empty LP gas tanks. Keep open flames and spark producing materials away from the LP-Gas area.**

## LP-GAS DETECTOR

Liquid Propane (LP) Gas is heavier than air and will settle to the lowest point, which is generally the floor of your fifth wheel. Other combustibles which may be detected include alcohol, liquor, deodorants, colognes, perfumes, wine, adhesives, lacquer, kerosene, gasoline, glues, most cleaning agents and propellant of aerosol cans. Most are lighter than air in their vapor state and will only be detected when the fifth wheel is closed up.



### Operation

**POWER ON:** When power is first applied the Yellow LED will flash for 3 minutes while the detector is stabilizing. At the end of that time the LED will turn Green, indicating full operation. If the detector has detected unsafe levels of gas it will immediately go into alarm. Fuse is located behind LP Detector.



**CAUTION: This detector cannot alarm during the 3 minute warm up cycle.**

### Testing

Simply press the Test switch any time during the warm up cycle or while in normal operation. The LED should flash Red and the alarm should sound. Release the switch. This is the only way you should test your detector.



**WARNING: Test the operation of this detector after the fifth wheel has been in storage, before each trip and at least once per week during use.**

The Red LED will Flash and the alarm will sound whenever a dangerous level of propane or methane gas is detected. The detector will continue to alarm until the gas clears or the Mute switch is pressed.

**Procedures to Follow During an Alarm**

- Turn off all gas appliances (stove, heaters, furnace), extinguish all flames and smoking material, evacuate, leave doors and windows open.
- Turn off the propane tank valve.
- Determine and repair the source of the leak. Seek professional help if necessary.

If, for some reason, the LED is not lit on the LP detector, you can check the fuse located behind the LP detector. To keep your detector in good working order you must:

- Test the detector weekly.
- Observe the color of the indicator light on the front of the detector.

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Press the Test-Mute button when the detector is in alarm.

1. The Red LED will continue to flash and the alarm will beep every 30 seconds until the gas level has dropped to a safe level.
2. The LED will flash Green until the end of the Mute cycle.
3. If dangerous gas levels return before the end of the mute cycle, the alarm will beep 4 times and return to phase 1.
4. After 2 minutes the detector will return to normal operation (solid Green) or resound the alarm if dangerous levels of gas remain in the area.

COLOR	DETECTOR OPERATION	SOUNDER
Yellow Flashing	Warm up cycle	off
Solid Green	Normal	off
Flashing Red	Alarm	continuous
Flashing Green	Mute Cycle	off
Flashing LED in mute cycle	Alarm	beep every 30 sec.
Red & Green alternating	Malfunction	2 beep every 15 sec.

PROBLEM	CAUSE & SOLUTION
LED Off	Faulty power connections, reverse polarity, bad or missing fuse or dead battery
No Sound in test NO Red LED in test	Defective. Return Immediately.
Alarm after warm up with no gas present	Contaminated sensor from an extended storage period. Press test-mute switch.
Red & Green LED constant alarm/No reset	Defective. Return Immediately.

## LP-Gas System

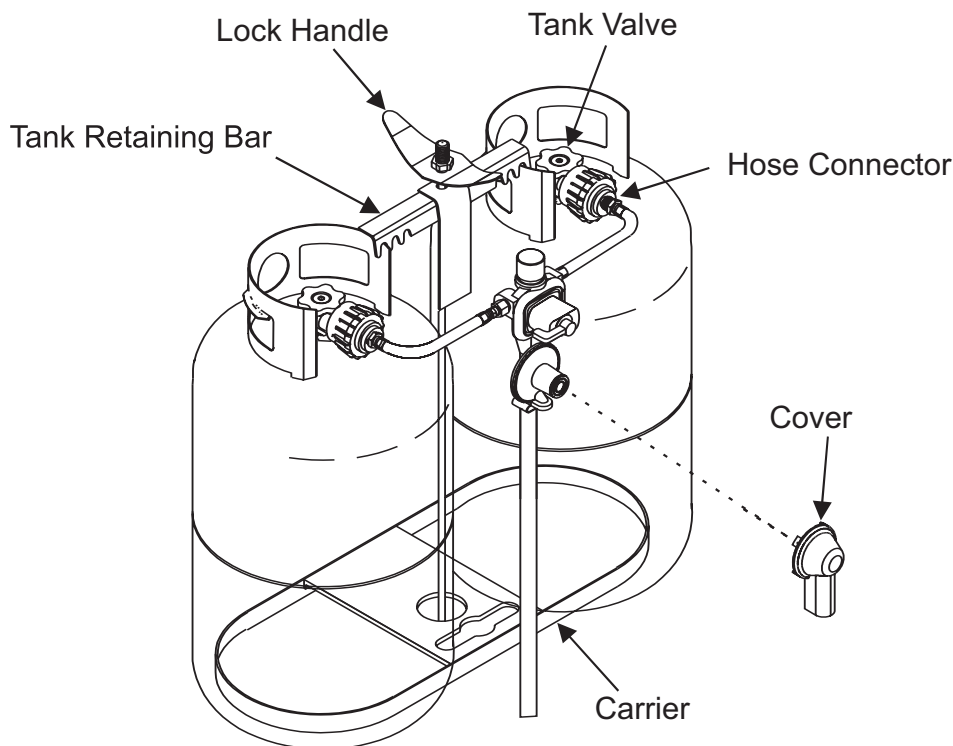
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### Care of Your Detector

1. Vacuum the dust off the detector cover weekly (more frequently in dusty locations) using the soft brush attachment of your vacuum.
2. Do not spray cleaning agents or waxes directly onto the front panel. This action may damage the sensor, cause an alarm or cause a detector malfunction.

## LP-GAS TANK FILLING

Never transport the fifth wheel without the tank retaining bar securing both tanks. Close the LP-Gas tank valve, hand tight. Shut off pilot lights, appliances and igniters (see operating instructions in Section 3) before filling the LP-Gas tanks to prevent a fire or explosion. Disconnect the hose from the LP-Gas tank (left hand thread). Loosen the tank retaining bar lock handle to release the tank.



## LP-GAS VALVES

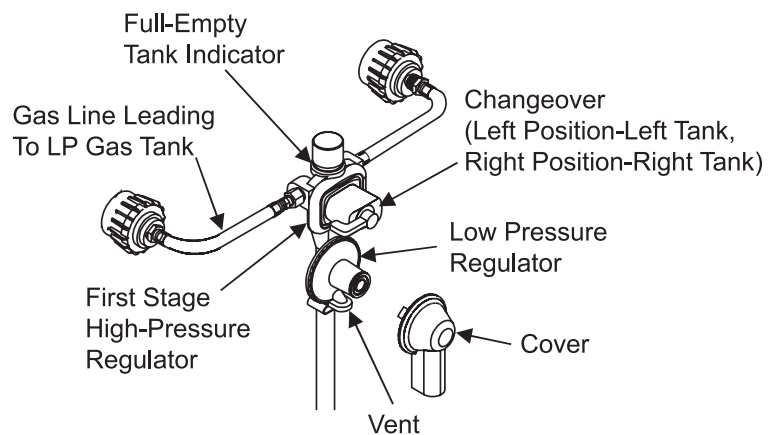
Remove the tank and have a trained service person fill your LP-Gas tank. Caution the supplier not to overfill your tank. Place the full tank into the carrier and secure both tanks with the retaining bar. Re-connect the hose to the tank. Open the valve and check for leaks.

Open both LP tank valves. The tank to which the "supply" on the changeover knob points is the service tank. As long as there is fuel in the service tank the full-empty indicator on top of the regulator will show white. When the service tank is empty the automatic regulator will begin

using fuel from the second tank. When this happens the full-empty indicator will change from white to red. At this point the valve on the empty tank should be shut off and the changover knob turned so the arrow faces the other tank. This tank then becomes the service tank and the full-empty indicator will again show white. The empty tank may now be disconnected for refilling. After the tank has been refilled and installed it becomes the reserve tank.

The regulator is the heart of an LP-Gas system. The LP-Gas in the tank is under high pressure. The regulator reduces the pressure of the gas so it is safe to use with various appliances. The regulator is equipped with a vent so it can breathe. This means that if the pressure in the LP tank is too high, the regulator will allow gas to escape through the vent until the pressure returns to a normal range. It is important to keep the vent clean and clear of obstructions or corrosion. If the vent becomes clogged, pressure from the LP tank could cause a failure of components. If you notice any corrosion contact a qualified LP-Gas service technician. The regulator is mounted so the vent faces downward. If the vent does become clogged you can clean it with a toothbrush.

## LP-GAS REGULATOR



**WARNING: Do not attempt to adjust the regulator, it is preset at the factory. If adjustments need to be made contact a qualified LP-Gas service technician. Adjustments can only be made by using special equipment.**



**WARNING: Before disconnecting an empty tank from the automatic changeover regulator, the valve on the empty tank should be closed and the selector arrow on the changeover knob should be turned so it is pointing toward the tank that remains connected to the regulator. After the tank is disconnected, a soapy water solution should be applied to the disconnected hose end fitting to check for leaks (bubbles indicate a leak). If a leak exists, reconnect the tank and have the system checked by a qualified LP-Gas service technician. Failure to follow these instructions may result in a fire or explosion and may cause severe personal injury or death.**

## **LP-GAS CONSUMPTION**

Each gallon of LP-Gas produces about 92,000 BTU's of heat. Two 30 gallon tanks produce 5-1/2 million BTU's. Total consumption depends on the rate of usage by each appliance and the operating time.

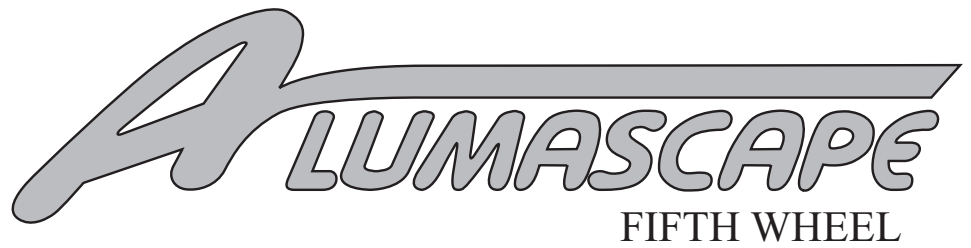
Oven and heating systems use the most gas. With sub-freezing temperatures and high winds, consumption by the furnace can be very high. Check the tank levels often in cold weather.

## **LP-GAS DISTRIBUTION LINES**

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The primary manifold is a black steel pipe running the length of your fifth wheel. All secondary lines leading to gas appliances are made of copper tubing with flared fittings. If any of these lines rupture, do not attempt to splice them. Always run a new line. We recommend gas distribution work be performed by an authorized dealer or an authorized service technician. When removing or servicing any gas appliance, close the main valve at both LP-Gas tanks. This will prevent dangerous gas leakage that could result in an explosion and possibly serious injury. If you suspect a leak, get the system inspected and repaired by a qualified service technician as soon as possible.





## **SECTION 6 ELECTRICAL SYSTEMS**

**INTRODUCTION 120/12 VOLT • 107**  
**CONVERTER/DISTRIBUTION PANEL • 107**

**GFCI BREAKERS & OUTLETS • 108**

**BATTERY • 109**

*Battery Charging*

*Batteries*

*Main Battery Disconnects*

*How Does the Battery Work*

*Battery Maintenance*

*Testing the Battery*

*Seven Reasons Why Batteries Fail*

*Battery Voltage Current*

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*Interior Lights*

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6



**INTRODUCTION  
120/12 VOLT**

Your fifth wheel is equipped with both 120 Volt AC and 12 Volt DC electrical systems. To hook-up to 120 Volt outside power, find the 50 amp grounded supply cord (shore line) and plug it into an outside 120 Volt power source and then into the fifth wheel input plug. Switch the main breaker to the ON position. When the breaker is turned on, the 120 Volt system will energize all 120 Volt circuits and outlets. The power converter automatically supplies 120 Volt DC power where it is needed inside. When a 120 Volt power source is not available, the coach batteries provide 12 Volt DC current to the same points as the converter. Changeover is accomplished automatically.



**WARNING: Disconnect the 120 Volt AC electrical shore cord and the negative terminal from the 12 Volt DC battery before working on the electrical system. Remove all rings, metal watch bands and other metal jewelry before working around batteries and connector. Be cautious when using metal tools. If a tool contacts a battery terminal or metal connected to it, a short circuit could occur which could cause personal injury, explosion or fire.**



**CAUTION: Before hooking up the park shore power, verify that proper voltage and ground protection is present. After hooking up to the park shore power, verify that voltage and ground protection are present in the fifth wheel. Inexpensive testers are available for this purpose.**

Circuits and fuse assignments are listed on distribution panels located inside trailer. When replacing fuses, always replace with same size as listed for a particular location. Fuse sizes shown are maximum fuse sizes allowable. Installing fuse sizes other than those listed can cause electrical wiring to become overloaded and create a hazardous situation.

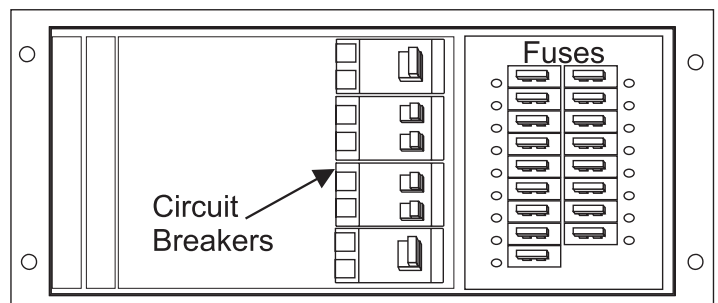
**CONVERTER/  
DISTRIBUTION  
PANEL**



**WARNING: The circuit and fuse assignments are listed on the distribution panels located inside the fifth wheel. When replacing fuses, always replace with the same size as listed for a particular location. Fuse sizes shown are the maximum fuse size allowable. Installing fuse sizes other than those listed can cause electrical wiring to become overloaded and create hazardous situations.**



**CAUTION: When installing a battery always observe polarity. Connecting a battery with reverse polarity will blow the power converter output fuses.**



## **GFCI BREAKERS & OUTLETS**

Ground fault circuitry is used in two applications. One is a type of circuit breaker used in the 120 Volt AC breaker panel. The other type is found incorporated in an outlet. When a circuit breaker or outlet with ground fault circuitry is properly installed, it provides overload and short circuit protection for branch circuit wiring, PLUS protection for people against hazardous ground fault electrical currents which can cause loss of life.

Ground fault currents are currents which flow from the power terminal and return on a path through a person to ground. For example, touching a faulty appliance while standing on or contacting an electrical ground such as a water fixture, bathtub or earth.

When a circuit breaker or outlet with ground fault circuitry trips, it can indicate an overload, short or ground fault of that circuit. This can be caused by faulty insulation, wet wiring for inside an appliance or equipment connected to the circuit. Immediately request an electrician to correct the problem.



**CAUTION: If the GFCI breaker continues to trip there is a loss in protection and a potentially dangerous condition. Have the system repaired by a qualified technician. Do not continue to reset breaker or outlet until the problem has been identified and corrected.**

The GFCI outlet or breaker is two devices in one. It protects against ground faults and is a circuit breaker for over-current protection. The “ground fault” portion uses sensitive electronics inside the outlet or breaker to detect current leaving the outlet or breaker and returning on the ground safety wire. Example: Normal current flow we think of as power is going to the “HOT” or black wire through the load (light bulb or appliance) and coming back on the “COMMON” or neutral wire. If just a small amount of current comes back on the safety ground wire, the electronics will trip the breaker or outlet, stopping the flow of electricity. The amount of current it takes to “trip” a breaker or outlet from a ground fault varies from different manufacturers, approximately 30 mils\* or less. The circuit breaker or outlet with ground fault circuitry provides protection only on the circuit to which it is connected. An electrical shock resulting from a ground fault can be felt, but such a shock will be considerably less than that of an unprotected circuit. People with heart problems or other conditions that make them susceptible to electrical shocks can be seriously injured.

The GFCI type outlet is also a breaker for over-current or short circuit protection. The GFCI outlet or breaker will not protect you from the normal current flow. Example: Touching both metal prongs of an electrical cord while plugging it in.



**NOTE:** The ground fault outlet or breaker should be tested once a month to ensure it is working properly. Use the "TEST" button on the outlet or breaker, it should trip with an audible "click." The breaker or outlet will not trip if AC power is not present. If power is present and the device will not "trip," replace it with the same type and amperage rating before using that circuit.



**NOTE:** \*One mil is equal to 1/1000 of one amp.

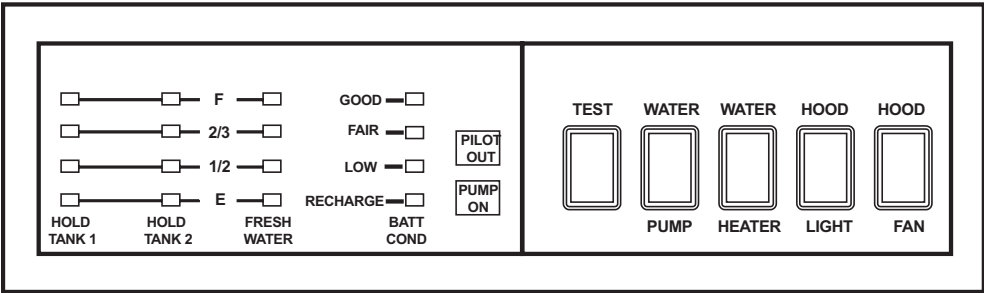
When the 120 Volt AC is NOT connected to the fifth wheel the converter, via its automatic relay, will switch the fifth wheel battery into the circuit for power to operate 12 Volt lights and motors. When dry camping (using the fifth wheel when shore power is not available or operating 12 Volt equipment from your fifth wheel battery) it is recommended that the amount of equipment in use be reduced to conserve the battery. Gradual dimming of lights and slowing of motors indicates low battery voltage.

## BATTERY

When the 120 Volt AC power is connected to the fifth wheel, the charging section will automatically sense the condition of the fifth wheel battery. If it is below full charge, the charging section will start charging the battery.

### Battery Charging

If the fifth wheel battery has been drawn down low it will be charged at a relatively high amperage rate. The rate of charge will decline as the battery reaches full charge. After the battery reaches full charge the charging section will drop back to maintenance level. It will not resume active charging until the battery again falls below full charge.



## Electrical Systems

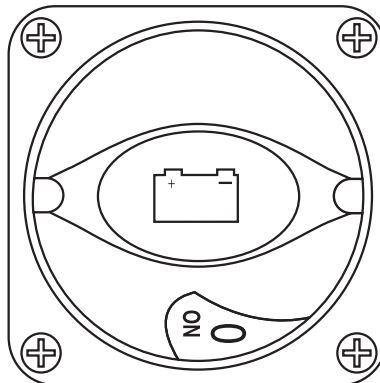
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### Batteries

Batteries come in different sizes, types, amp hours, voltages and chemistries. There are nearly as many descriptions of battery types and how they should be used, as there are people willing to offer advice on batteries. It is not possible to discuss all aspects of batteries in detail; however, there are guidelines you can follow that will help ensure that your batteries are well maintained.

### Main Battery Disconnects

The main battery disconnect is located in front compartment next to the battery. Turn off the batteries any time the fifth wheel is going to be stored and not in use. If possible, leave the fifth wheel plugged into an AC source with the battery disconnect on. This will help prevent the batteries from going dead. Use of the battery cut-off switch will not turn off all DC electrical items. There are small “parasitic” loads that are present on the house battery. Some are federal mandate items, such as the LP detector. If the fifth wheel will not be used, or will be stored for more than 48 hours, it is recommended to turn the battery off.



Deep cycle batteries are best suited for use with 12 Volt operated lights, appliances and inverter. They are designed to have the majority of their capacity used before being recharged. Deep cycle batteries are available in many sizes and types. The most common is a non-sealed, liquid electrolyte battery. The non-sealed types have battery caps which should be removed periodically to check the level of electrolyte. When a cell is low, only distilled water should be added. Water consumption will vary depending on many factors: how far the batteries are depleted, how much voltage is applied, how long the voltage is applied to charge the batteries and how often this occurs.



**NOTE: Tap water contains minerals which can alter battery chemistry and ruin the battery. Use only distilled water when refilling the battery.**

### How Does the Battery Work

The operation of a battery is based on a chemical reaction. The battery is comprised of lead plates and a solution of distilled water and sulfuric acid. When the solution is mixed together it is known as “electrolyte.” The 12 Volt battery is actually six batteries in one case. When charged, each cell has a voltage of 2.1 volts. When six cells are hooked together it makes a 12.6 Volt battery (fully charged).

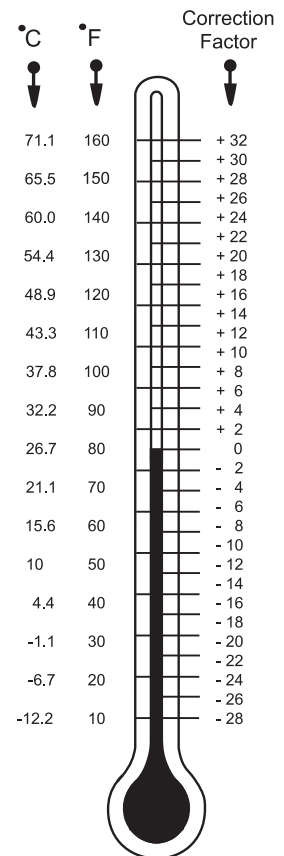
Electrons are stored on the negative plates. When a load (such as a light bulb) is put between the positive and negative terminals, the electrons move from the negative plate to the positive plate through the “load” and back to the ground terminal. At this time, the sulfuric acid leaves the water and adheres onto the plates of the battery. The electrolyte solution keeps the electrons from flowing internally while the battery is in the “at rest” position.

Charging the battery moves the sulfuric acid back into the solution with the distilled water. A battery left in a low or discharged state will cause the acid to “sulfate.” This means that in an attempt to recharge the battery, the acid has become hardened and will no longer leave the plates and enter into a liquid solution with the distilled water. The lowered acid to water ratio has a direct affect on the battery’s ability to release the stored electrons (power output) and the length of time it can perform (reserve capacity). Batteries left in a discharged condition can readily freeze, causing the case to crack and the solution to spill. The plates may also warp. The acid acts like an “antifreeze” for the battery. Batteries should not be left or stored in a discharged condition.

The battery electrolyte level should be checked at least once a month. Check the level sooner if frequently used. The level should be above the top of the plates, but not overfull. Most batteries have a plastic cup or well. The electrolyte level should be approximately 1/8” below the well to allow room for expansion while the battery is being charged. Over filling the battery will cause the electrolyte solution to boil or gas out of the battery cap. Remember to use only distilled water to refill the battery. A battery with a low electrolyte level will rapidly boil the water out once the plates have been exposed to air. This process may take only a matter of hours. If this has occurred, the battery is more than likely damaged.

After checking the battery’s electrolyte level, it is also a good time to check the battery connections for tightness and corrosion. If corrosion is found, disconnect the cables (marking their location) and carefully clean them with a mild solution of baking soda and water. (Aerosol products are also available for this task.) This will neutralize any acid that may be present. Do not allow the solution to enter the battery. This will damage the electrolyte balance. Use water to rinse the top of the battery area when done. Hook the cables back to the battery. Coat the terminals with petroleum jelly or an anti-corrosion grease.

**Battery Maintenance**



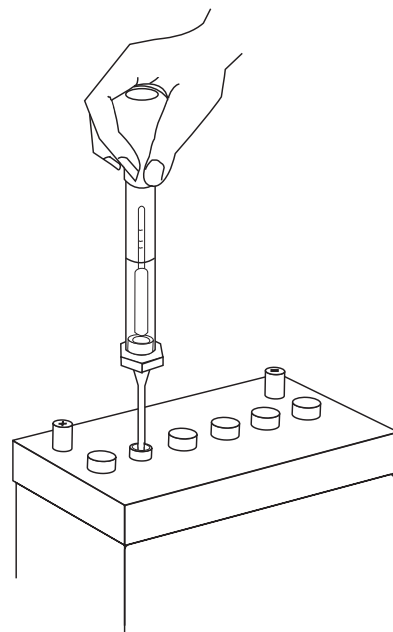
The battery cable to the battery terminal connections should be metal to metal. Periodically check the batteries for corrosion. Look for cracks and check the vent plugs. Replace them if they are cracked or missing. Keep the top of the batteries clean. The accumulation of electrolyte and dirt may permit small amounts of current to flow between the terminals, which can drain the battery.

### Testing the Battery

The only way to test a battery's electrolyte solution is with a hydrometer. Many styles are available, from types with cylinder graduation (shown here) to types with floating balls. These can be purchased from most auto parts stores. The hydrometer tests the battery's electrolyte solution which is measured in specific gravity (sulfuric acid to water ratio). Distilled water has been assigned a specific gravity of 1000. The hydrometer is then calibrated to this mark. Pure sulfuric acid has a specific gravity reading of 1840. This means that the acid is 1.84 times heavier than water. The electrolyte solution is about 64 percent water to 36 percent acid (fully charged battery). Hydrometer with cylinder graduation are graphed and the exact state of specific gravity can be determined.

Temperature and recent battery activity (charging or discharging) affect the hydrometer readings. It is best to check the battery when it has been "at rest" for at least three hours, although readings taken at other times will give a "ball park" figure.

Using the hydrometer, draw the electrolyte solution up into the tube. Allow the hydrometer to attain the same temperature as the electrolyte solution. Note the reading for that cell. Complete the same test for the rest of the cells on that battery bank.



**NOTE: See chart for temperature compensation. Liquid levels should be even between the cells of the battery being tested. It will affect the accuracy of the test.**

Chart readings are taken at 80° Fahrenheit. Temperature affects hydrometer readings. The higher the electrolyte temperature, the higher the specific gravity reading will be. The lower the temperature, the lower the specific gravity reading will be. Add or subtract four points for each 10° variance from the 80° chart. Readings between cells should not vary more than 50



points. If one cell in a particular battery bank being tested is at a 50 percent state of charge, while the others are fully charged, charge that battery to see if the low cell will come up. At the same time, do not overcharge the “healthy” cells. If the low cell does not come up after charging, the battery can damage the rest of the battery bank and should be replaced. An accurate digital voltmeter + - .5% will also give an indicator of the battery’s state of charge.

Another test that can be preformed is to put the battery(s) under a specified load for a predetermined length of time, adjusted for that particular battery’s rating. The machine used for this is usually an adjustable carbon pile that can vary the load applied to the battery(s) while monitoring voltage to see if they will perform to the specific rated capacities.



**WARNING: Sulfuric acid in the batteries can cause severe injury or death. Sulfuric acid can cause permanent damage to eyes, burn skin and eat holes in clothing. Always wear splash-proof safety goggles when working around the battery. If battery electrolyte is splashed in eyes or on skin, immediately flush the affected area for 15 minutes with large quantities of clean water. In case of eye contact, seek immediate medical aid. Never add acid to a battery once the battery has been placed in service. Doing so may result in hazardous splattering of electrolyte.**

---

**1. Physical Condition:**

Active material flakes off the plates and fall to the bottom of the cell. This is normal, but sediment accumulates under the plates and can short out a cell. The plate separators fail to insulate positive and negative plates in a cell and the cell becomes shorted, ruining the battery.

**2. Insufficient Electrolyte:**

Insufficient electrolyte allows exposed portions of the plates to sulfate rapidly, which reduces the battery’s ability to accept a charge. Battery capacity is reduced. Accelerated erosion of the lower portions of the plates occur from higher than normal acid content due to water loss. Only the water evaporates, not the acid. The battery also has a higher internal resistance when low on water. Add only distilled water. Fill each cell to the bottom of the vent well when the battery is warm. Filling a cold battery with water to the bottom of the vent well will cause overspill when the battery warms up and the plates expand.

A Battery Formula For Failure: The battery has a higher internal resistance when low on water. Therefore  
high resistance = more heat = a shorter battery life!

*Seven Reasons Why  
Batteries Fail*

### 3. Sulfation:

When a battery is allowed to remain discharged too long, the accumulated lead sulfate in the plate material solidifies and cannot reenter the electrolyte. The sulfate in the plates is not able to reconstitute the electrolyte to a higher specific gravity, or to restore the plate material to a more active composition.

### 4. Overheating:

A battery operated when the electrolyte temperature reaches 125°F increases the chemical reaction. This increases the corrosion of the plates and reduces the life of the battery. When overheated, the battery plates tend to buckle and destroy the structural integrity of the battery.

### 5. Freezing:

When the electrolyte freezes, the ice formed dislodges the active material from the plates. The battery case may crack and the electrolyte will leak out when thawed. It is especially important to keep a battery at full charge in cold weather to prevent freezing. The high specific gravity of a full charged battery does not freeze as easily. Never attempt to recharge a frozen battery. Warm it up first.

### 6. Corrosion:

Corrosion from spilled or splashed electrolyte form deposits that can conduct electricity and cause battery drain. Clean off all corrosion, especially around the battery terminals and on the top cover of the battery. Prevent accumulation by coating the terminals and the exposed metal cable connector with high temperature grease.

### 7. Overcharging:

Overcharging rapidly converts water to gas and decreases the electrolyte's water content as the water evaporates. The electrolyte level drops and becomes more acidic in content. This subjects the plates to a higher concentration of sulfuric acid and results in early battery failure.

---

## Battery Voltage & Current

Why does the voltage on a discharged battery measure the same as a fully charged battery until the loads are applied?

The simple answer to this goes as follows: A battery creates electrical power by converting energy from a chemical reaction into electrical energy. As this reaction slows down, the battery voltage will drop. In a lead acid battery the electrolyte conductivity (how well electrical current can flow through) changes. The same current may be available but the rate of the reaction decreases, causing a voltage drop.

Another way of looking at this is to use the analogy of a water pump (a battery is an electric pump). The pressure in PSI that a pump delivers is like a battery's voltage. The volume of water in gallons/minute (GPM) is like the electrical current. Let's look at a 12 PSI pump with no loads (the pump is running but the outflow valve is turned off). The pump will run and the internal pressure of the pump will build up to some point higher than 12 PSI. Once the valve is opened and the water is free to flow into the loads, the pressure will drop to the rated output pressure of 12 PSI, but only if the load is not too big. If the pump is designed to maintain 12 PSI at 15 GPM, and a load demanding 20 GPM is connected, the pump will not be able to keep up and the pressure will get sucked down to a lower PSI. If the load is then reduced or removed, the pump will catch up and return to its rated 12 PSI pressure. If the pump has an infinite source of water, such as a lake or the water utility (this is like the grid, no battery), the pump will never run out of pressure. If the pump does not run out of pressure, and is operated at or below its 15 GPM level, it will hold 12 PSI.

A pump that is connected to a water tank with a finite capacity will start to lose the ability to hold pressure as the level of water in the tank drops. Think of siphoning water from a bucket. As the level of the water drops, the volume of water exiting the siphon slows down.

When the tank is full, it is capable of feeding more "pressure" to the pump inlet due to gravity. The pump always has enough water available to maintain its rated pressure and volume. However, if the water tank gets low, the pump will not have enough water volume coming in to maintain 12 PSI at 15 GPM. If the loads are taken away from the pump by closing the valve on the outflow, even with low pressure in the tank, the pump will eventually pump up to 12 PSI, it will just take it longer to get there. When the valve is opened the pump will sustain 12 PSI for a brief period, but since the tank is no longer feeding the pump as fast as needed, the pressure will eventually drop. This analogy can be restated by replacing the pump with a battery, pressure with voltage, volume with amps, the outflow valve with a switch, water with electricity and the water tank with the battery electrolyte.

The level of the tank could be thought of as the rate of the reaction taking place in the electrolyte. When the battery is fully charged, the electrolyte has an excess of reactions taking place to feed the battery terminals. This tapers off with time as the electrolyte is spent. Maintaining voltage becomes possible. With no loads, the spent electrolyte will be capable of producing close to the rated voltage. This happens after enough reactions have taken place over a period of time to bring the voltage back up.

Hopefully this scenario will help to make it clear why a battery measured at rest can show close to its rated voltage, but will not run a load.

## **SOLAR PANEL**

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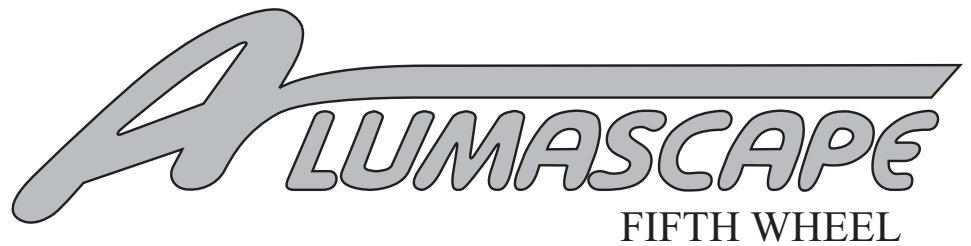
Every fifth wheel comes pre-wired for the addition of a Power Base Solar Battery Charging System. There are four wires (two eight gauge for Solar Power and two smaller gauge for temperature compensation) that run from the battery compartment to the rear overhead vent. They lay coiled just to the front of the vent within the ceiling/roof cavity. To access the wires, remove the inside vent shroud. Facing forward, reach inward four to six inches to find wires. For after market solar installation, these wires will have to be accessed.

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Cosmetic Light (3-Bulb)	Bulb 1141	<b>BULB USAGE</b> <i>Interior Lights</i>
Wall Sconce (Bedroom)	Bulb 1141	
Ivory Convenience Light	Bulb 563	
Bedroom Vanity Light	Bulb 1141	
Single Pancake	Bulb 1141	
Double Pancake	Bulb 1141	
Dinette Light	Bulb 1141	
Brass Bullet Light	Bulb CEC93	
Bath Light	Bulb 1141	
<hr/>		
Tail/Stop/Turn Light	Bulb 1157	<i>Exterior Lights</i>
Storage Compartment Light	Bulb 1141	
License Plate Light	Bulb ATOM168	
Porch Light	Bulb 1008	
Amber Clearance Light	Bulb 194	
Red Clearance Light	Bulb 194	
Entry Step Light	Bulb 1156	
Clear Utility Light	Bulb 10031	
Rear Side Marker Light	Bulb 194	
Hitch Light	Bulb 1141	

*Notes*

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## **SECTION 7 CARE & MAINTENANCE**

### **CARE-EXTERIOR • 121**

*Roof Care*

### **LUBRICATION & MAINTENANCE SCHEDULE • 122**

### **CARE-INTERIOR • 123**

*Vinyl Furniture*

*Vinyl*

*Fabric Cleaning Code*

*Leather*

*Carpet Cleaning*

*Wood Flooring*

*Wallpaper*

*Solid Surface Care & Maintenance Tips*

*Mini-Blind*

*Condensation*

*Controlling Moisture Condensation*

### **GLOSSARY OF TERMS • 134**





## CARE-EXTERIOR

The exterior of your fifth wheel is made of fiberglass/aluminum. Wash it frequently with mild soap and a soft rag, in lukewarm water. If you travel roads that have been salted for ice, wash your fifth wheel as soon as possible. Most common causes of corrosion are due to an accumulation of road salt, dirt and moisture in hard to reach areas under your fifth wheel. A good automotive cleaner/wash should be used occasionally to remove tree sap, road tar, insects and industrial fall-out that may damage surfaces. Do not use naphtha or turpentine. We recommend that you wash your fifth wheel about every three weeks and wax it in the spring and fall. Aerosol cans of spray enamel, for use on steel chassis parts, are available from your dealer. Do not use spray enamel on fiberglass. Check the seals around doors, windows, vents and external seams at least twice a year. If a seal is cracked or dried out it should be replaced to prevent leakage. Sealants can be purchased from your dealer. Check the seals twice a year to see if they are cracked or peeling; if so, reseal the seams. Consult your authorized dealer for the proper sealant.

Proper care and maintenance of your fifth wheel, including your Brite-Ply roof is important for trouble-free performance. Normal maintenance is simple, easy and requires no special material.

### Roof Care

1. Keep your roof clean. Clean your roof at least four times annually.

#### For normal cleaning:

- Use RC100 or a mild laundry detergent.
- Rinse complete roof with clean water to remove any loose dirt or debris.
- Using a medium bristle brush, along with cleaner mixed with water, scrub the entire roof. Rinse thoroughly with clean water to avoid residue build-up on the roof or sidewalls of the vehicle.
- For more difficult stains, you may use RC100 (mentioned above) in a more concentrated mixture. For stubborn stains, use a cloth dampened with mineral spirits. DO NOT use mineral spirits in a large area or allow it to soak into the membrane. Household bleach can also be used (fully concentrated) and allowed to soak in stubborn stain areas, then scrubbed with medium bristle brush or a cloth. Rinse thoroughly.



**NOTE: Recommended cleaner: RC100 Dicor Synthetic Roof and General Purpose Cleaner.**



**CAUTION: DO NOT** use cleaners or conditioners containing petroleum solvents, harsh abrasive or citric based cleaners. You may cause irreparable damage to your roof. Use caution when working on top of your vehicle. The wet Brite-Ply membrane may be extremely slippery.

2. Beware of areas where fruit, tree sap or harsh environmental fallout may stay on the roof for an extended period of time. These conditions may result in irremovable stains. If you are parked in these conditions, increase the frequency of your cleaning.

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## LUBRICATION & MAINTENANCE SCHEDULE

### Every Hook-Up:

- Check the operation of windows, latches and hinges.
- Check, clean and tighten the battery cables.
- Lubricate all movable parts on the entrance step.
- Clean the air conditioner filter.

### Every 3 Months:

- Flush the fresh water system.

### Every 5,000 Miles or 6 Months:

- Lubricate the exterior doors and locks with silicone.
- Rotate the tires.
- Clean the window and door seals with a mild soap. Spray with a silicone lubricant.
- Reseal around the bath tub if needed.
- Check the gas appliances for proper operation.
- Inspect and reseal the entrance door jamb corners.
- Check the tightness of lug nuts. Check the wheels and nuts for cracks.
- Have the LP-Gas system checked by an authorized service dealer.
- Check the roof seams for cracks or peeling.
- Check the seal around outside windows. Reseal if needed.

### Every 10,000 Miles or 1 Year:

- Have the wheel bearing adjustments checked by an authorized dealer.

Normal use of the fifth wheel may cause certain fittings and fasteners to loosen due to road vibrations and excessive use. Periodic inspection and maintenance should be performed on these items. If your fifth wheel is placed in storage, check it periodically. The battery must be charged periodically even if not used.



**WARNING:** Read directions thoroughly before beginning a procedure. The following are suggested methods of cleaning. Holiday Rambler Corporation and the interior manufacturers are not responsible for damage incurred while cleaning. The interior care and maintenance instructions contained in this manual apply to the interior furnishings and decor for model year 2001.

## CARE-INTERIOR

**For Normal Cleaning:** Most common stains can be cleaned using warm soapy water and clear water rinses. Moderate scrubbing with a medium bristle brush will help loosen soil from the depressions of embossed surfaces. For stubborn stains, use the following commercially available mild detergents in accordance with manufacturers' instructions: Mr. Clean or Fantastic.

### *Vinyl Furniture*



**NOTE:** Detergents should never be used on a regular or repeated basis for normal cleaning.

Full strength rubbing alcohol or mineral spirits may be tried cautiously as a last resort on very stubborn stains if the above suggestions do not work. Indiscriminate use of any solvent or solvent containing cleaner can severely damage or discolor vinyl. Stains may become permanent if they are not removed immediately. The procedure for removal of more severe staining agents are outlined below.

**Bird Excreta & Nausea Stains:** Sponge the area with soapy water containing a diluted bleach until the stain is removed. Rinse thoroughly with clean water.

**Urine Stains:** Sponge with soapy water containing a small amount of household ammonia. Rinse thoroughly with clean water.

**Surface Mildew:** Wash with diluted bleach. Use a soft brush for stubborn growth. Rinse repeatedly with clear, cold water.



**WARNING:** Powdered abrasive cleaners containing abrasive, steel wool and industrial strength cleaners are not recommended for Morbern vinyls. Any lacquer solvent will cause immediate irreparable damage to the vinyl. Wax should never be used on any vinyl upholstery, as it will cause premature embrittlement and cracking. Dilute chlorine bleach before using. Never use full strength. If flammable solvents such as alcohol, turpentine or varsol are used for cleaning, only small quantities should be employed in a well ventilated area. Exercise proper caution by notifying any persons in the area and keep away from any ignition source. Always wear protective gloves.

**Ballpoint Ink:** Permanent Marker Ink spots will stain vinyl permanently. Immediate wiping with rubbing alcohol in a well ventilated area will remove much of the stain.

**Oil-Base Paint:** The use of turpentine in a well ventilated area will remove any fresh paint. Dried paint must be moistened carefully with a semi-solid gel-type stripper so that the softened paint can be gently scraped away. Rinse with soap and water.



**CAUTION: Direct contact with paint strippers will remove the print pattern from a vinyl. Paint strippers are very corrosive. Take caution to avoid skin contact by wearing protection.**

**Latex Paint:** Fresh paint can be wiped off with a damp cloth. Hot soapy water will normally remove dried latex.

**Tar, Asphalt:** Remove immediately, as prolonged contact will result in a permanent stain. Use a cloth lightly dampened with mineral spirits and rub the stain gently, working from the outer edge of the stain toward the center in order to prevent spreading. Rinse with soap and water.

**Crayon, Mustard, Ketchup:** Sponge with mild soap and water. For stubborn stains that may have set, use a cloth soaked in diluted mild detergent with gentle rubbing. Any remaining stain should be washed with diluted bleach. Rinse repeatedly with cold water.

**Chewing Gum:** Scrape off as much as possible with a dull knife. Rubbing with an ice cube will assist to remove when scraping. The remaining gum should then be removed in a well ventilated area using a cloth saturated with mineral spirits. Rub lightly. Rinse thoroughly with clean water.

**Lipstick, Grease, Oil, Make-up, Shoe Polish:** Apply a small amount of mineral spirits with a cloth. Rub gently. Be careful not to spread the stain by smearing it beyond its original source. No time should be lost in removing shoe polish as it contains a dye which will cause permanent staining. Rinse thoroughly with water.

**Candy, Ice Cream, Coffee, Tea, Fruit Stains, Liquor, Wine, Tanning Lotion, Soft Drinks:** Use lukewarm water and sponge repeatedly. Any loose material should be gently scraped with a dull knife. Any soiled area remaining after drying should be gently rubbed with a cloth spotted with a mild detergent solution. Rinse thoroughly.

**Blood, Plant Residue:** Rub out any spots with a clean cloth soaked in cool water. If stubborn spots remain, use household ammonia and rinse repeatedly with a clean, wet cloth. Do not use hot water or soapsuds, as this will set the stain.

Several areas of the fifth wheel may be covered in vinyl. These areas include furniture and the ceiling. Vinyl requires periodic cleaning to maintain its neat appearance and to prevent the buildup of dirt and contaminant's that many permanently stain and reduce the life of the vinyl if not removed. The frequency of cleaning depends on the amount of use and environmental conditions to which the vinyl is subjected. The procedures used for cleaning are outline in the Morbern Vinyl section and are dependent upon the end-use circumstances.

Vinyl



**NOTE: Detergents should never be used on a regular or repeated basis for normal cleaning.**

“W”- Clean this fabric with the foam only of a water-based cleaning agent to remove overall soil. Many household cleaning solvents are harmful to the color and life of a fabric. Cleaning only by a professional furniture cleaning service is recommended. To prevent overall soil, frequent vacuuming or light brushing to remove dust and grime is recommended.

Fabric Cleaning Code

“S”- Clean this fabric with pure solvents (petroleum distillate-based products such as Energine, Carbona, Renuzit, or similar products may be used) in a well-ventilated room. Cleaning only by a professional furniture cleaning service is recommended.



**CAUTION: Use of water-based or detergent-based solvent cleaners may cause excessive shrinking. Water stains may become permanent and unable to remove with solvent cleaning agents. Avoid products containing Carbon Tetrachloride as it is highly toxic. To help prevent overall soiling, frequent vacuuming or light brushing to remove dust and grime is recommended.**

“S/W”- Clean this fabric with the foam only of a water-based cleaning agent or with a pure solvent in a well-ventilated room (petroleum distillate-based products, Energine, Carbona, Renuzit or similar products may be used). Cleaning only by a professional furniture cleaning service is recommended. To help prevent overall soiling, frequent vacuuming or light brushing to remove dust and grime is suggested.

**Care & Maintenance**

FABRIC	BRIAR ROSE .302	USED
St. Francis Berry		Sofa, Din. Cushion LR.Lamb. Bols.
Allstar Dark Rose		Chair, LR Pillow (2) Din. Cushion Free Standing Dinette, LR Lam
Bentello/Sparta Ruby		Bedsread, BR Lamb. BR Drape
Spreme Satin Wine		BR Accent #1 Headboard
Supreme Satin Willow		BR Accent #2, BR Lambr. Ties
SANDSTONE .303		
Hatteras Sand		Sofa, Din. Cushion LR.Lamb. Bols.
Dispatch Tan		Chair, LR Pillow (2) Din. Cushion Free Standing Dinette, LR Lam
Urbana Earthtone		Bedsread, BR Lamb. BR Drape
Stardust/ML Chocolate		BR Accent #1 Headboard
Supreme Satin Antique Ecru		BR Accent #2, BR Lambr. Ties
BLUE ATLANTIS .304		
24587 Supernature UPH/RR		Sofa, Din. Cushion LR.Lamb. Bols.
Hathaway 837710 Pacific 2499		Chair, LR Pillow (2) Din. Cushion Free Standing Dinette, LR Lam
Norg II/ML Iceberg		Bedsread, BR Lamb. BR Drape
Avalon French Blue		BR Accent #1 Headboard
Supreme Satin Buff		BR Accent #2, BR Lambr. Ties
Mekinis 033	EVERGREEN .305	
Hathaway 837710		Sofa, Din. Cushion LR.Lamb. Bols.
Antique Green 8525		Chair, LR Pillow (2) Din. Cushion Free Standing Dinette, LR Lam
Trudy Aqua		Bedsread, BR Lamb. BR Drape
Supreme Satin Spruce		BR Accent #1 Headboard
Supreme Satin Rosette		BR Accent #2, BR Lambr. Ties

**Spots & Spills:**

Absorb excess liquid immediately with a clean cloth or sponge. Use water only if necessary. Do not use a cleaning product. If water is used, clean the entire area where the spot occurred. An example would be the entire seat cushion or entire arm. Let air dry. Do not dry wet areas with hair dryer, etc.

**Stubborn spots and stains:**

Use lukewarm water and a mild soap to work up a thin layer of suds on a piece of cheesecloth. Scrub the surface. Rinse with a piece of clean, damp cheesecloth. Let air dry.

Do not use saddle soap, cleaning solvents, furniture polish, oils, varnish, abrasive cleaners, soaps or ammonia water.



**NOTE: These are recommended or suggested methods of cleaning. The manufacturer is not responsible for damage incurred while cleaning. Always try the cleaning method in a hidden area first to convince yourself of the results.**

**Spot Removal Procedures:**

- Act quickly when anything is dropped or spilled. Remove spots before they dry.
- Blot liquids with a clean, white absorbent cloth or paper towel.
- For semi-solids, scoop up with a rounded spoon.
- For solids, break up and vacuum as much as possible.
- Pretest the spot removal agent in an inconspicuous area to make certain it will not damage the carpet or its dyes.
- Apply a small amount of the cleaning solution recommended for the particular spot. Do not scrub. Work from the edges of the spot to the center. Blot thoroughly. Repeat until spot is removed.
- Follow steps on the Carpet Spot Removal Guide.
- After each application, absorb as much as possible before proceeding to the next step.
- Absorb remaining moisture with layers of white paper towels, weighted down with a non-staining glass or ceramic object.
- When completely dry, vacuum or brush the pile to restore texture.
- If the spot is not completely removed, contact a professional carpet cleaner.

*Carpet cleaning*

## Care & Maintenance

### Cleaning Solutions

**A** Dry cleaning fluid- A nonflammable spot removal liquid, available in grocery and hardware stores.

**B** Nail polish remover- Any acetate, which often has a banana fragrance. Do not use if it contains acetone.

**C** Detergent solution- Mix two cups of cold water and 1/8 teaspoon mild liquid detergent (no lanolin, non-bleach).

**D** Warm water- lukewarm tap water.

**E** Vinegar Solution- One cup WHITE vinegar to one cup water.

**F** Ammonia solution- One tablespoon household ammonia to one cup water.

**G** Spot removal kit- Available from retail carpet stores or professional cleaners.

**H** Call professional- He/she may be able to give additional suggestions, have special cleaning chemicals or have the ability to patch the area.

**I** Permanent change- Due to the nature of the stain, there is a possibility of color loss. Either the carpet has been permanently dyed or the carpet yarns have been permanently damaged.

\* While the recommended cleaning agents have proven to be effective some stains may become permanent.

	A	B	C	D	E	F	G	H	I
	DRY CLEANING FLUID	NAIL POLISH REMOVER	DETERGENT SOLUTION	WARM WATER	VINEGAR SOLUTION	AMMONIA SOLUTION	SPOT REMOVAL KIT	CALL PROFESSIONAL	PERMANENT CHANGE
Use the solution specified in order from 1-8 until stain is removed.									
<b>SPOTS</b>									
Acid				2		1		3	*
Acne Medication		1		2	5	4	3	6	*
Alcoholic Beverage			1	4	3	2			*
Ammonia				2	1				*
Bleach		1	2					3	*
Blood		1	3		2	4			
Candle Wax	1					2			
Cement & Glue	2	1	3		5	4	6		*
Chalk		1	2						
Charcoal		1	2						
Chewing Gum	1								
Coffee			1	3	2		4	5	*
Cosmetics		2	1	3	6	5	4	7	*
Crayon	1		2	3					
Drain/Toilet Cleaner			2	1	3			4	*
Dye	1		2		4	3	5	6	*
Food			1	4	3	2	5	6	*
Fungicides/Insecticides/Pesticides	1		2	5	4	3	6	*	
Furniture Polish (Water Based)			1	4	3	2	5	6	*
Furniture Polish (Solvent Based)	2	1	3	6	5	4	7	8	*
Furniture Stain	2	1	3	6	5	4	7	8	*
Graphite		1	2						
Grease	1	2	3				4	5	*
Ink	2	1	3	6	5	4	7	8	*
Iodine	1		2	5	4	3	6	7	*
Lipstick	2	1	3	6	5	4	7	8	*
Medicine	2	1	3	6	5	4	7	8	*
Merthiolate			1	4	3	2	5	6	*
Nail Polish	2	1	3				4	5	*
Oil	1		2	4		3		5	*
Paint	2	1	3				4	5	*
Plant Food			1	4	3	2	5	6	*
Rust			2	3	1		4	5	*
Shoe Polish	2	1	3	5		4	6	7	*
Soft Drinks			1	4	3	2	5	6	*
Soot	1		2	3				4	*
Tar	1						2	3	*
Toothpaste			1						
Urine			1		2		3	4	*
Vomit			1	4	3	2	5	6	*



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**Routine Care Instructions**

Wood Flooring

1. Vacuum, use a dust mop or wipe with a damp cloth.
2. For spills, just wipe up or spray and wipe with Armstrong Once 'n Done Trigger Spray.
3. Do not use soap-based detergents or "mop and shine" products. These may leave a dull film on your floor.
4. Do not use abrasive cleaners, steel wool or scouring powder which can scratch your floor. In very sandy areas, sweep or vacuum regularly.
5. Do not wax or polish your floor.

**Spring Cleaning Instructions:**

1. Use a well-squeezed damp mop with Armstrong Once, 'n Done No-Rinse Floor Cleaner. Use the lowest dilution ratio. Do not flood the floor. A light damp mop is all you need.

**Tough Spots:**

1. Remove tough spots (shoe polish, tar and asphalt driveway sealer) with nail polish remover containing acetone (follow instructions on label). Wipe with a damp cloth.

**Protecting the Floor:**

1. Place a natural or colorfast mat at outside entrances to collect tracked in dirt and absorb excess moisture.
2. For added indentation resistance, use Armstrong floor protectors on chairs and other furniture. As a general rule of thumb, the heavier the item, the wider the floor protector should be.
3. You may purchase Armstrong floor care products and floor protectors at your local flooring retailer.

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Time is very important when removing substances that are solvent based or contain color.

Wallpaper

**Fidelity and Jolie brands:** Do not use abrasive cleaners containing chlorine bleach or solvents. Always begin with a mild detergent or soap and warm water. Clean with a soft sponge. Rinse and wipe dry. This should remove normal dirt.

### **Satinesque Wallcoverings :**

Any stain should be removed as quickly as possible to minimize any reaction between the staining agent and the wallcovering. Time is very important when removing substances that are solvent based or contain color. Examples: nail polish, oil, shampoo, lacquer, enamel, paint, ink and lipstick.

Always begin cleaning with a mild detergent, such as soap. If necessary, move to a stronger cleaner like household bleach, liquid household cleaners or rubbing alcohol. However, before using one of the stronger cleaners, test the cleaning agent on a small inconspicuous portion of the wallcovering to make sure that the cleaner does not affect the color or gloss of the wallcovering.

**Normal dirt:** Remove with a mild soap or detergent and warm water. Allow to soak for a few minutes. Rub briskly with a cloth or sponge.

**Nail polish, Shellac, or Lacquer:** Remove excess with a dry cloth. Be careful not to spread the stain. Quickly clean the remaining stain with rubbing alcohol. Rinse with clean water.

**Ink:** Remove immediately. Wipe with a cloth dampened in rubbing alcohol.

**Chewing gum:** Rub with an ice cube to make the gum cold, less sticky and easier to work with. Pull off the bulk of the gum. Clean any remaining gum with rubbing alcohol.

**Pencil:** Erase as much of the pencil mark as possible. Wipe any remaining marks with rubbing alcohol.

**Blood, Feces or Urine:** Remove these staining substances as quickly as possible. Wash the stained area with a strong soap. If the stain does not disappear, rinse the soap solution with clean water and then mix a solution of 50% water and 50% household bleach. Clean the stained area with the bleach solution. Rinse with clean water.

**Tower Wallcovering:** Remove ordinary stains with mild soap and warm water. Sponge on. Rinse well and dry with a soft cloth.

**Special cleaning problems:** To remove ballpoint pen, blood, lipstick, etc., use sponge or soft bristle brush and Formula 409, Fantastic or similar product. Rinse well and dry. Finish cleaning by applying full strength isopropyl alcohol with sponge or soft brush. Rinse well and dry.

Solid surface was created for a lifetime of easy care. Just follow the simple guidelines listed here to keep your surfaces looking good.

**Routine Care**

There is one type of countertop in your fifth wheel: matte/satin finish. All solid surface sinks and bowls have the matte/satin finish. Soapy water or ammonia-based cleaners will remove most dirt and stains from all tops and bowls. However, slightly different techniques must be used to remove different stains. Follow the recommendations below.

**Cleaning Countertops:**

- Most dirt and stains: Use soapy water or ammonia based cleaner.
- Water marks: Wipe with damp cloth. Towel dry.
- Difficult stains: Use soft scrub and a Grey Scotchbrite Pad.
- Disinfecting: Occasionally wipe surface with diluted household bleach (1 part water and 1 part bleach).

**Cleaning Solid Surfaces Sink:**

- Occasionally clean by using Soft Scrub Liquid Cleanser and a Grey Scotchbrite Pad. Scrub sink, rinse and towel dry. Do as often as necessary.

**Removing Cuts and Scratches:**

- Because the beauty of solid surface goes all the way through, solid surface countertops are completely renewable. You can remove minor cuts and scratches by the following instructions below.
- Sand with 180 grit and then 320 grit sandpaper until scratch is gone. Restore finish with Grey Scotchbrite Pad. Remember, never apply pressure to one small spot. Feather out lightly to blend restoration.

Solid surface withstands heat better than ordinary surface materials.

However, hot pans, as well as heat-generating appliances such as frying pans or crock pots can damage the surface. To prevent heat damage, always use a hot pad or trivet with rubber feet to protect your solid surface. In most cases your solid surface can be repaired if accidentally damaged.

### Other Important Tips:

Avoid using strong chemicals, such as paint removers and oven cleaners, on a solid surface. If these substances come in contact with solid surface, quickly wash with water. Avoid contact with nail polish or nail polish remover. If contact is made quickly wash with water.



**NOTE: Do not cut directly on solid surface. Always run cold water into solid surface sinks when pouring boiling water into sinks.**

Any glass will develop water spots if not cleaned properly. A spotting effect is magnified when glass has a reflective finish. Use a squeegee immediately after washing to reduce water spotting. To remove stubborn water stains from reflective glass we recommend Cerium Oxide Polishing Compound. This compound is made by C.R. Lawrence and is available at most glass shops.

### Mini-Blind

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- To maintain on a frequent basis, vacuum with the brush attachment.
- There are dusting tools available in the marketplace designed for mini-blinds.
- To wash, mild soap and water is best. This can be done in a tub or the blinds can be hung on a fence or wall and rinsed with a hose.

### Condensation

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Condensation is a natural phenomenon. The amount of condensation will vary with climate conditions, particularly relative humidity. Condensation occurs because there is water vapor present in air, and each of us adds more by breathing, bathing, cooking, etc. Water vapor collects wherever there is available air space. When temperature reaches the dew point, water vapor in air condenses and changes to liquid form.

### Controlling Moisture Condensation

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You can reduce or eliminate interior moisture condensation during cold weather by taking the following steps:

Partially open the roof vents and windows so that outside air can circulate into the interior air. Increase ventilation when larger numbers of people are in the fifth wheel. Even when it is raining or snowing, air from outside will be far drier than interior air.

Install a dehumidifier. Continuous use of a dehumidifier will be more effective in removing excess moisture from the interior air. While use of a dehumidifier is not a cure-all, it will reduce the amount of outside air

needed for ventilation.

Reduce the moisture released inside the fifth wheel. Run the range vent fan when cooking and the bath vent fan (or open bath vent) when bathing to reduce water vapor. Avoid making steam from excessive boiling or use of hot water.

Do not heat the fifth wheel interior with the range or oven. Heating with the range or oven increases the risk of toxic fumes and oxygen depletion. Also, open flames add moisture to interior air, increasing condensation.

In very cold weather leave the cabinet and closet doors partially open to warm and ventilate the interior of the storage compartments. Air flow will warm the exterior wall surface reducing or eliminating condensation and preventing possible ice formation.

## **GLOSSARY OF TERMS**

**Ampere (AMP)** - The unit of measure of electron flow rate of current through a circuit.

**Black Water** - Term associated with the sewage holding tank. The toilet drains directly into this tank.

**City Water** - A term associated with the water supply that you hook up to when at campgrounds. It is called city water because you pull water from a central source (like in a city) and not the fresh water tank.

**Circuit** - An electric circuit is the path of an electronic current. A closed circuit has a complete path. An open circuit has a broken or disconnected path.

**Curbside** - This refers to the side of the fifth wheel which faces the curb when it is parked. Often called the door side.

**Current** - The rate of flow of electricity or the movement rate of electrons along a conductor. It is comparable to the flow of a stream of water. The unit of measure for current is the ampere.

**Current (Alternating)(AC)** - A current that varies periodically in magnitude and direction. A battery does not deliver alternating current. Also referred to as shore power, utility power, inverter power, generator power, etc.

**Cycle** - In a battery, one discharge plus one recharge equals one cycle.

**Drain Trap** - This is a curve that is in all drains. Water is trapped in the curve and this creates a barrier so tank odors cannot escape through the drain.

**Dry Camping** - Camping in the fifth wheel when there is no city water hookup or shore power. In other words, using only the water and power that is in the fifth wheel and not from another source.

**Dump Station** - Sites where you can drain your waste (gray) and sewage (black) tanks. In most states it is illegal to drain your tanks anywhere except at dump stations.

**Dump Valve** - Another name for the T-handle valve used to drain the sewage (black) and waste (gray) tanks).

**E.G./I.E.** - The abbreviation *e.g.* means "for example," whereas *i.e.* means "that is."

**Egress Window** - The formal name for the emergency window located in the rear of the fifth wheel. Egress windows can be easily identified by their red handles.

**Full Hookup Site** - A campground that has city water, shore power and sewer hookups or connections available.

**Gray Water** - Term associated with the waste water holding tank. Water from the sink drains, the shower and the washer-dryer (if equipped) go into this tank.

**Low Point** - The lowest point in the plumbing. Drains are placed here so that water will drain out of the lower end of the fifth wheel. These drains must be closed when you fill the water tank.

**OHM** - A unit for measuring electrical resistances.

**Ohm's Law** - Express the relationship between volt(E), amperes(I) in an electrical circuit with resistance(R). It can be expressed as follows:  $E=IR$ . If any two of the three values are known, the third value can be calculated by using the above formula.

**Pull-Through Site** - Camp sites that you pull the unit through without having to back up into the site.

**Shore Line** - This is the electrical cord which runs from the fifth wheel to the campground 120 volt electrical supply.

**Shore Power** - This is the 120 volt outlet that you can plug your fifth wheel into at a campground.

**Stabilizing Jacks** - These jacks are extended after you have parked the fifth wheel. They are used to stabilize your fifth wheel once it is level.

**Stinger** - An arm attachment on a tow truck that is used to lift the fifth wheel slightly so that it can be towed.

**Volt** - The unit of measure for electric potential.

**Watt** - The unit of measuring electrical power, i.e., the rate of doing work, in moving electrons by or against an electric potential.

## ***Glossary***

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**Wet Cell Battery** - A type of battery that uses liquid as an electrolyte. This type of battery requires periodic maintenance such as cleaning the connections and checking the electrolyte level.

**Winterized** - If you see this on a unit it means that the unit has been prepared for storage. All water systems are drained and RV antifreeze has been added to protect the water lines and drains. Low point drains will be open.