

FOREST RIVER



Travel Trailer Owner's Manual

BEGIN THE JOURNEY!



Welcome Letter



Welcome Home!

Welcome to the Forest River family and thank you for selecting a Forest River Inc. product. Congratulations for choosing a lifestyle that will provide you the freedom to enjoy recreation wherever you may choose.

This Owner's Manual is designed as a Quick Reference Guide for the operation and care of your new purchase. For more complete instructions regarding safety, maintenance and operation of the items used in the manufacturing of your RV, carefully read the booklets supplied by the component manufacturers. All information contained in this manual may not relate to your specific model; however, booklets supplied by the component manufacturers and included in your Owner's packet will provide any additional information needed. You can also access this information by visiting **www.forestriverinc.com** and selecting the appropriate prompts or by downloading the mobile phone app at the Apple TM APP Store or Google Play TM for Android TM.

Your dealership personnel should be able to answer any questions or concerns you may have regarding your new product. If your dealer is unable to do so, please feel free to contact our Customer Service department for assistance. Your dealership will provide you with the appropriate contact information.

Your recreational vehicle was built using the high standards set by Forest River Inc. and following the strict guidelines set forth by the Recreational Vehicle Industry Association (RVIA) as well as complying with the requirements of all applicable state and federal agencies.

Please carefully read the Limited Warranty in the front of this manual. Forest River Inc. has no other expressed or implied warranties of any type. You, as the owner, are responsible for providing proper maintenance as outlined in the manual and as set forth in the component manufacturer's booklets.

NOTE:

FAILURE TO PROPERLY MAINTAIN YOUR UNIT COULD RESULT IN LOSS OF WARRANTY COVERAGE

Several of our component manufacturers carry their own warranties and require separate warranty information to be filed with them. Please read all component manufacturers' owner's manuals provided with your RV and file appropriate individual warranty cards as required.

You have joined an elite group, and as you begin making great memories using your new Forest River RV, we wish you many exciting and adventurous days of RV camping.

INTRODUCTION

Warranty

LIMITED WARRANTY TOWABLE PRODUCTS

FOREST RIVER INC.

RECREATIONAL VEHICLES BY FOREST RIVER INC.

Thank you for choosing to purchase a Recreational Vehicle by Forest River Inc., a fine product in which design and construction have received the care that quality demands. This important warranty covers many items and is indicative of our desire to stand behind our products and assure our customers' complete satisfaction.

WARRANTY COVERAGE

SUMMARY OF WARRANTY: Forest River Inc., 55470 CR 1, P.O. Box 3030, Elkhart, Indiana 46515-3030 (Warrantor) warrants to the ORIGINAL CONSUMER PURCHASER ONLY, when purchased from an authorized Forest River Inc. dealer, for a period of one (1) year from the date of purchase (Warranty Period), that the body structure of this recreational vehicle shall be free of substantial defects in materials and workmanship attributable to Warrantor.

EXCLUSIONS FROM THIS WARRANTY: Warrantor expressly disclaims any responsibility for damage to the unit where damage is due to condensation, normal wear and tear or exposure to elements. Warrantor makes no warranty with regard to, but not limited to, the chassis, including, without limitation, any mechanical parts or systems of the chassis, axles, tires, tubes, batteries and gauges, routine maintenance, equipment and appliances, or audio and/or video equipment. Their respective manufacturers and suppliers may warrant some of these items. Warranty information with respect to these items is available from your dealer.

The Warrantor further makes no warranty with regard to any product used for commercial purposes, as a permanent residence or as a rental unit, or any product not registered and normally used in the United States or Canada.

LIMITATION AND DISCLAIMER OF WARRANTIES: WARRANTOR EXPRESSLY LIMITS THE DURATION OF ALL EXPRESS AND IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE EXCEPT IN THOSE STATES THAT DO NOT ALLOW THIS EXCLUSION. WARRANTOR EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AFTER EXPIRATION OF THE WARRANTY PERIOD. No action to enforce express or implied warranties shall be commenced later than ninety (90) days after expiration of the warranty period. There is no warranty of any nature made by the Warrantor beyond that contained in this Warranty. No person has authority to enlarge, amend or modify this Warranty, except this Warrantor.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

No action to enforce express or implied warranties shall be commenced without prior written notice to the manufacturer and/or warrantor at the address listed above of the alleged defect or nonconformity or the authorized repair facility's failed repair attempt and MANUFACTURER, AT ITS DIRECT OPTION, shall have a final opportunity to remedy.

DISCLAIMER OF CONSEQUENTIAL AND INCIDENTAL DAMAGES: THE ORIGINAL CONSUMER PURCHASER OF THIS RECREATIONAL VEHICLE AND ANY PERSON TO WHOM THIS UNIT IS TRANSFERRED, AND ANY PERSON WHO IS AN INTENDED OR UNINTENDED USER OR BENEFICIARY OF THIS UNIT, SHALL NOT BE ENTITLED TO RECOVER FROM WARRANTOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES.

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

WARRANTOR'S OBLIGATIONS: Warrantor will remedy substantial defects in materials and workmanship caused by Warrantor. Warrantor shall elect to remedy the defect from among the following: repair, replacement or refund. Warrantor may not elect refund unless the Purchaser agrees, or the Warrantor is unable to provide replacement and repair is not commercially practicable. Warranty performance can only be obtained at Warrantor's authorized dealers and service centers and from Warrantor at the discretion of the Warrantor. All costs incurred in transporting this recreational vehicle for warranty service shall be borne by Purchaser. Warrantor shall remedy the defect within a reasonable amount of time after appointment and delivery by Purchaser. All of Warrantor's expenses in remedying the defect shall be borne by the Warrantor.

PURCHASER'S OBLIGATIONS: Purchaser must complete, sign and return the owner's registration within ten (10) days of purchase to validate this Warranty. The return of this registration is a condition precedent to warranty coverage; failure to return the completed registration to the Warrantor will invalidate this warranty. Purchaser shall deliver this recreational vehicle for warranty service within a reasonable time after discovery of the defect and in no event after expiration of the Warranty period, which Warranty Period is one (1) year. All expenses incurred by Purchaser in obtaining warranty service shall be borne by Purchaser. Warranty service shall, whenever possible, be scheduled with the selling dealer by an appointment in order to avoid possible delays. Purchaser can, if necessary, obtain a list of persons authorized to perform warranty service by contacting Warrantor at the above address. No action to enforce express or implied warranties shall be commenced without prior written notice to the manufacturer and/or warrantor at the address listed above of the alleged defect or nonconformity or the authorized repair facility's failed repair attempt and MANUFACTURER, AT ITS DIRECT OPTION, shall have a final opportunity to remedy.

EVENTS DISCHARGING WARRANTOR FROM OBLIGATION UNDER THIS WARRANTY: Misuse or neglect, including failure to provide reasonable and necessary maintenance, unauthorized alteration, accident, and improper loading, use as a permanent residence, commercial use or leasing of the recreational vehicle, shall discharge Warrantor from any obligation under this Warranty.

PARTS AND DESIGN CHANGES: Warrantor reserves the right to change the parts and design of its recreational vehicle from time to time without notice and with no obligation to maintain spare parts or make corresponding changes in its products previously manufactured.

OBTAINING WARRANTY SERVICE: To ensure your local dealer's personal interest in your complete satisfaction, it is recommended that all warranty service be performed by the authorized dealer from whom you purchased your unit. Following a move or as you are traveling, should warranty service become necessary, such service shall be performed by any authorized dealer in the United States or Canada. Such service shall also, whenever possible, be scheduled by an appointment in order to avoid possible delays.

WARRANTY REGISTRATION: A warranty registration is to be completed by the owner at the time of purchase and returned to the Warrantor. The return of this registration is a condition precedent to warranty coverage; failure to return the completed registration to Warrantor will invalidate this Warranty.

OTHER WARRANTIES: As indicated in the paragraph above, entitled 'Exclusions From This Warranty', certain items that are not covered by this Warranty may be warranted separately by their manufacturers or suppliers. In order to validate those warranties, you may also be required to complete and return to the appropriate manufacturer the warranty forms included with the information package. These other warranties may cover, but are not limited to, such items as chassis, axles, tires, tubes, batteries, optional generators, and appliances, which are not covered by this Limited Warranty. For service or parts required for these products, it may be necessary to write or call the product manufacturer to obtain the nearest authorized service center location. In requesting parts for separately warranted products from the manufacturer of the product or its authorized service center, it may also be necessary to first obtain a warranty work authorization number before the work is done. It may also be necessary to provide the Product Name, Model and Serial Number along with the description of the problem and part needed, plus shipping instructions. See these warranties with respect to their terms and conditions.

OWNER ASSISTANCE: Your confidence and good will are important to Forest River Inc. as is maintaining a pleasant relationship with our dealers. We, at Forest River, recognize that there may be occasions when a warranty or service problem is not handled to your satisfaction, resulting in misunderstandings. After discussing the situation with the dealership management, if your problem has not been resolved to your satisfaction, we welcome you to contact the Forest River Customer Service Manager at the address listed above. Our recommendations for an agreeable solution will be communicated to the local dealer.

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

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CUSTOMER INFORMATION

Manufacturers' Warranties

The following list of components has been compiled to help you know which products installed on your recreational vehicle may have their own warranties. If you have any of these components on your RV, be sure to check the manufacturer's literature supplied with your RV Owner's packet to confirm whether they require you to register your purchase with them to validate their warranty. These warranties usually apply only to the first owner of the recreational vehicle. We recommend that you send the various warranty registration cards immediately before any time constraints on registration expire.

Manufacturer's literature is supplied by each individual company according to the specific items used in the production of your RV. This information is part of the Owner's packet you received with your RV. Only those products which are used on your unit will be included in this packet. Inspect this literature with your dealer during the pre-delivery inspection and report any literature shortage to the dealer at that time.

APPLIANCES

- Range
- Water Heater
- Range Hood
- Microwave/Convection Oven
- Coffee Maker
- Refrigerator
- Ice Maker
- Roof Air Conditioner
- Heaters
- Furnace
- Radio/Clock
- TV/VCR/CD/DVD
- GPS

WATER & DRAINAGE

- Water Pump
- Purifier
- Faucet
- Toilet
- Holding Tank
- Propane
- Propane Tanks
- Regulator

US ELECTRICAL

- 120/12V Converter
- Inverter
- Detector Generator
- Battery

MISCELLANEOUS

- Fire Extinguisher
- CO Detector
- Smoke Detector
- Propane Detector
- Rear Ladder

CHASSIS

- Hitch
- Stabilizing Jacks

NOTE:

A component manufacturer is one who produces a product which is used in the production of your RV.

Taking Delivery

There is one form the dealer will complete concerning your new recreational vehicle, the PDI (Pre-Delivery Inspection sheet)/Warranty Registration form. If you do not have a copy in your Owners packet, request a copy of this form for your records. It is an important part of the history of your RV. A qualified dealer representative will perform a 'walk-through' demonstration which will provide you with important information regarding the operation of your unit. Be sure you fully understand the information given and the proper functioning of your unit to ensure you have the best camping experience possible. Your dealer will fully explain all the system functions and will supply component information for items used in the manufacture of your recreational vehicle.

Making a Service Appointment

When you call to schedule your appointment, have the following information available:

1. RV Identification Number (17 letters and digits, sometimes referred to as a serial number).
2. Type of unit (for example, 2008 Cherokee Wolf Pack fifth wheel).
3. Date of purchase.
4. Description of the problem.
5. History or repairs and repair center location (where the repairs were performed).
6. A calendar with your schedule noted for convenience in coordinating a service date that works for you and the repair center.

Organize

Planning ahead and being prompt when having service are beneficial for all. When someone misses his or her appointment, or arrives late, it disrupts the service schedule for the entire day. Please be courteous, and drop your unit off at the scheduled time and on the scheduled date. Have a list ready, be specific, and be reasonable with your expectations. Some repairs may require special-order parts.

Waiting at the Repair Facility

For safety reasons, most insurance policies prohibit non-employee personnel to be in the work area. If it is necessary for you to wait until the repairs are completed, most dealers provide you with a safe, comfortable customer lounge.

Dealer's Responsibilities

1. The selling dealership is responsible for inspecting both factory and dealer installed components for proper operation. This is known as the pre-delivery inspection and systems check.
2. Your dealer is required to provide a thorough and complete walk-through demonstration. This demonstration should provide a good understanding of how your new RV operates.
3. The owner's information packet should be presented at this time. This information should include all warranty cards, component information, operation and maintenance instructions relating to your new unit.
4. All component warranty forms should be discussed and/or completed at this time. Your selling dealer should assist you in understanding any and all limited warranty provisions to help you avoid loss of warranty for any reason. Ask any questions you may have before leaving the dealership.
5. Your dealer should provide you with information concerning any need for service for your unit, whether in or out of their area. They should provide contact numbers for the dealership both during and after hours along with contact information for the correct Forest River division.

Customer's Responsibilities

1. Regular and proper maintenance - As the owner, you have the responsibility to properly maintain your recreational vehicle. Be sure you have service performed in a timely manner; don't ignore a problem. It isn't always necessary to take your unit to a service center; sometimes a phone call is all that is needed. The service technicians can advise you.
2. Familiarize yourself with your RV. Observe all the component manufacturers' instructions regarding the use and service of their products.
3. Complete and send in all the warranty cards. Doing so may help you avoid conditions arising from neglect that are not covered under warranty.

NOTE:

Modifications to your RV, without written authorization from Forest River Inc., could result in reduction or loss of warranty coverage. Contact your dealer before making such changes.

The following is a list of suggestions to assist you in avoiding most warranty issues:

1. Read your warranties and review them with your selling dealer. The dealer's obligation is to educate you regarding the proper and safe operation of your RV and all its components.
2. Be sure to inspect the entire unit and note any service issues.

3. Locate all paperwork and ask any questions you may have before leaving the dealership.

NOTE:

Forest River Inc. wants you to have the best possible adventure with your new RV. To get the most enjoyment out of your new RV and to ensure you fully understand how your new recreational vehicle operates, please address immediately any questions or concerns you may have regarding your RV with your dealer before using your unit for the first time.

NOTE:

Use your new recreational vehicle responsibly. Your camper was not designed to be used as a permanent dwelling, but for short-term and recreational use. If you intend to use your RV as permanent housing, it could cause premature wear on your appliances, furnace, water systems, carpet, drapes, upholstery, bedding and interior surfaces. This premature wear caused by permanent residency may be considered abnormal or abusive use and could reduce or in some cases void your warranty coverage.

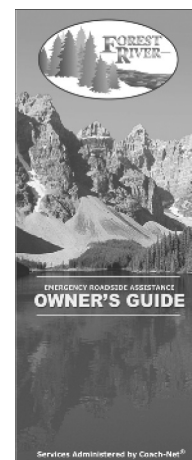
Coach-Net®

Coach-Net®

RV Technical & Roadside Assistance

When you take delivery of your new Forest River Inc. recreational vehicle, you are provided with an emergency roadside assistance service - free. We've teamed up with the largest RV emergency roadside assistance company in the country to give you immediate access to fast, dependable service when and where you need it. This is a comprehensive emergency roadside service that is available to you 24/7, around the clock.

For complete details regarding how to access your Forest River emergency roadside assistance and product support plan benefits, call 1-877-801-0333 or see the information in the back of this manual.



CUSTOMER INFORMATION

Reporting Safety Defects

THE FOLLOWING IS ADDED AS A REQUIREMENT OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA).

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

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

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.safercar.gov>; or write to: Administrator, NHTSA, 400 Seventh Street SW, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

NOTE:

If you have repairs performed by a non-Forest River repair center, you still must return the defective part to Forest River to be considered for warranty repair reimbursement.

Warranty/Pre-Delivery (Sample) Forms

TOWABLES 269461

FOREST RIVER, INC. CUSTOMER DELIVERY AND WARRANTY REGISTRATION FORM

DEALER TO ASSURE THAT THIS FORM IS PROPERLY COMPLETED & RETURNED TO FOREST RIVER INC. WITHIN (10) WORKING DAYS AFTER
PDI IS PERFORMED. (SEE BACK OF FORM FOR CORRECT MAILING ADDRESS)



OWNERS NAME:		E-MAIL ADDRESS:		DEALERS NAME:		CHASSIS VIN #	
ADDRESS:	Street:	City:	State:	Zip:	ADDRESS:	Street:	City:
DEL DATE:	PHONE #:	FOREST RIVER INC. SERIAL # (LAST 7 DIGITS)	Zip:	BRAND:	MODEL #:	State:	Zip:

PLEASE MARK EACH ITEM OK OR NA (NOT APPLICABLE)

ELECTRICAL SYSTEM		FOLDING CAMPER & BUNK END UNITS ONLY		WATER/PLUMBING SYSTEM (cont.)	
120 VOLT SYSTEM/CIRCUITS, BREAKERS, OPERATION	COMPLETE SET-UP/CLOSING & LIFTER DEMONSTRATION	TOILET OPERATION			
120 VOLT AUXILIARY GENERATOR OPERATION	FIT & FINISH AND CONDITION OF CANVAS	BLACK TANK CLEANOUT DEMONSTRATED/EXPLAINED			
12 VOLT/CONVERTOR CIRCUITS, FUSES, OPERATION	REMOVE DOLLY WHEEL BEFORE TRANSIT	WATER FILTER OPERATION DEMONSTRATED			
GROUND FAULT CIRCUIT INTERRUPTOR (GFCI)	RUNNING GEAR/FRAME	ALL FITTINGS TIGHT/NO SYSTEM LEAKS			
ALL INTERIOR LIGHTS, RECEPTS, SWITCHES	BRAKE ADJUSTMENTS & MAINTENANCE IF NECESSARY	P-TRAPS/VENTS TIGHT/CONNECTED			
ALL EXTERIOR LIGHTS, RECEPTS, SWITCHES	BRAKE WIRE CONNECTIONS CHECKED	EXTERIOR			
BATTERY SYSTEM	COUPLING/UNCOUPLING PROCEDURES & OPERATION	ENT. DOOR(S)/COMPT. DOORS/LOCK-ALL KEYS			
MONITOR PANEL OPERATION	OPERATE & LUBE JACKS IF NECESSARY	ENTRANCE STEP(S) LEVEL/SECURE TO FRAME/ALIGNED			
PHONE/CABLE/SATELLITE FUNCTIONS	TIRE CONDITION & PRESSURE SET @ PSI (INCL. SPARE)	PAINT GRAPHICS, SIDING IN GOOD CONDITION			
AUDIO/VIDEO ENTERTAINMENT SYSTEM FUNCTIONS	WHEEL LUG TORQUE SET/MFG. SPEC/RE-CK@250 MI	TRIM/SEALANTS, WINDOWS, ROOF, BODY			
PROPANE DETECTOR	SPARE TIRE CHECKED FOR SIZE, PRESSURE CONDITION	AWNING DEMONSTRATED/CANVAS CHECKED			
SMOKE DETECTOR	LP GAS SYSTEM	FUEL STATION-SURV			
ALL INTERIOR FANS	LOCATION OF LP LINES & CONNECTIONS SECURE	STABILIZER JACKS DEMONSTRATED			
STABILIZER JACKS (IF ELECTRIC)	OPERATION OF REGULATOR	EXTERIOR MAINTENANCE PROCEDURES EXPLAINED			
SHORE CORD INSPECTION & OPERATION	EXTERIOR GRILL USE & OPERATION DEMONSTRATED	SLIDE OUT(S) (IF APPLICABLE)			
APPLIANCES	LP BOTTLES FILLED AND IN GOOD CONDITION	OPERATION & MANUAL OVERRIDE DEMONSTRATED			
FURNACE & THERMOSTAT	WATER/PLUMBING SYSTEM	INTERIOR/EXTERIOR SEALS CHECKED			
RANGE/OVEN	POTABLE WATER INTAKE/DRAIN LOCATIONS	HYDRAULIC OR ELECTRIC PUMP/LINES CHECKED			
WATER HEATER	DEMAND PUMP DEMONSTRATED	SLIDE OUT TOPPER(S) CANVAS/OPERATION CHECKED			
REFRIGERATOR	CITY WATER FILL CONNECTIONS	GENERAL			
AIR CONDITIONER & THERMOSTAT	FALCETS/FIXTURES/INCL. W/D-WATER PRESSURE CHECKED	UNIT CLEANED			
MICROWAVE	WINTERIZING PROCEDURE/RY PASS DEMONSTRATED	ALL ACCESSORIES (INCLUDING REMOTES) ARE IN UNIT			
WASHER/DRYER	EXTERIOR SHOWER DEMONSTRATED	ALL WARRANTY FORMS ARE COMPLETED & REVIEWED			
CENTRAL VACUUM	BLACK HOLDING TANK/GATE VALVE OPERATIONS	ALL REQUIRED LITERATURE IS IN UNIT			
	GREY HOLDING TANK(S)/GATE VALVE OPERATIONS	ALL OWNERS MANUALS IN UNIT & REVIEWED			
	FRESH WATER TANK FILLED/EMPTIED				

LIST DEALER INSTALLED OPTIONS (THESE ARE NOT COVERED UNDER THE FOREST RIVER, INC. LIMITED WARRANTY)

OWNER/DEALER INSPECTION REVIEW

- EXTERIOR & INTERIOR FIT & FINISH
- OPERATED ALL APPLIANCES, OPTIONAL EQUIPMENT & ACCESSORIES (REVIEWED MAINTENANCE & SAFETY OF LP GAS SYSTEM)
- EXPLAINED WEIGHT RATINGS, LIMITATIONS & PROPER LOAD DISTRIBUTION, RUNNING GEAR/FRAME OR CHASSIS MAINTENANCE
- REVIEWED TOW VEHICLE GVWR, HITCH, SWAY CONTROL SET-UP, BRAKE CONTROL & OFFERED A TEST DRIVE WITH MY VEHICLE
- COMPLETE REVIEW OF OWNERS MANUALS & HIGHLIGHT OF SAFETY ISSUES

I have completed the above inspections on this family recreational vehicle to my satisfaction and have been offered a test drive at the time of purchase. I understand that issues regarding damage such as scratches, tears, dents, broken items, etc. will not be warranted except those noted in this space:

I have had the opportunity to review the Forest River, Inc. Limited warranty during the purchase of this unit and I understand that this product is designed to be used for recreational camping and travel. I have been given the opportunity to make notations in the space provided above, have observed or received satisfactory explanations to all questions regarding the items listed during this delivery process.

DATE

PURCHASER'S SIGNATURE

DEALER'S SIGNATURE

F-0915

CUSTOMER INFORMATION

How to Contact Us

Coachmen RV

P.O. Box 30, Middlebury, IN 46540
email: CRVinfo@forestriverinc.com
Phone: (800) 353-7383

Dynamax

2745 Northland Drive, Elkhart, IN 46514-7619
Phone: (888) 295-7859

Palomino RV

1047 E. Hwy M-86, Colon, Mi 49040
Phone: (269) 432-3271

Prime Time Manufacturing

P.O Box 3030, 55470 CR 1, Elkhart, IN 46515
Phone: (574) 862-3001

Shasta RV

105 14th Avenue, Middlebury, IN 46540
Phone: (574) 825-7178

Coach-Net™ Roadside Assistance

Emergency Roadside Assistance

When you take delivery of your new Forest River RV, you can travel worry-free knowing you have an RV technical expert and emergency roadside assistance just a phone call away. We've teamed up with one of the largest, independently owned emergency roadside assistance providers in the country to give you immediate access to fast, dependable service when and where you need it. Coach-Net RV Technical & Roadside Assistance has been included in your purchase - FREE for 1 year!

For further details regarding how to access your Emergency Roadside Assistance, please call 1-877-801-0333.

BENEFITS

EMERGENCY ROADSIDE ASSISTANCE	✓
RV TECHNICAL ASSISTANCE HOTLINE	✓
RV SERVICE APPOINTMENT SERVICE	✓
EMERGENCY TRIP INTERRUPTION	✓
EMERGENCY MESSENGER SERVICE	✓
NATIONWIDE TRIP ROUTING	✓

Benefits

- On-Site Emergency Roadside Assistance includes services such as towing, flat tire assistance, delivery of emergency fluids, jump start/battery boost and lockout/locksmith. Winch out or extraction services required in order to tow the disabled vehicle are covered for one man, one truck for two hours or two men, two trucks for one hour up to 100 feet off a maintained road or in a commercial campground.
- RV Technical Assistance Hotline is staffed with certified technicians and factory-trained representatives who understand the unique needs of RVers. Having access to a RV expert who can guide you through many common operational issues over the phone is priceless.
- RV Service Appointment Assistance is a hassle-free way of arranging for a service appointment when and where you travel. We make an appointment for you and give you directions and a time that fits your schedule.
- Emergency Trip Interruption – Should your vehicle become disabled due to a collision more than 100 miles from home you may be reimbursed up to \$2000; reimbursement up to \$300 for the rental of an automobile, up to \$1000 for airline tickets, up to \$300 for meals and up to \$400 for hotel/motel lodging to the extent made necessary by the conditions of the emergency and subject to any limitations under applicable state law.
- Emergency Messenger Service – Stay in touch with family and friends with no cost emergency message service.
- Nationwide Trip Routing – Make your next trip more enjoyable with custom trip routing and full color maps. We provide easy-to-follow maps and directions, travel tips, and a list of interesting places to see and much more.

Coverage

Coverage is available for one year on your new RV and one additional family automobile or truck identified as eligible for the plan. Assistance is available 24 hours a day, 7 days a week by calling the toll-free number on your ID Card. Services are available on a "sign & drive" basis throughout the U.S. and Canada, and services are available in Mexico but limitations apply.



Benefits and services provided by NMC -RV, Inc. This is a brief summary of the program benefits. Limitations, restrictions and exclusions apply. If there are any conflicts between this document and the Guide, the Guide shall govern.

IDENTIFICATION AND SAFETY

LEGEND

Listed below are symbols and descriptions you will find throughout this manual. They are used to alert you to possibly dangerous or hazardous situations. When you see these symbols, please read them carefully and follow the instructions to help prevent damage to your recreational vehicle and for your personal safety.

⚠ DANGER DANGER! (Indicates a hazardous situation which, if not avoided, will result in death or serious injury.) This sign is commonly RED.

⚠ WARNING WARNING (Indicates a hazardous situation which, if not avoided, could result in death or serious injury.) This sign is commonly ORANGE.

⚠ CAUTION CAUTION (Indicates a hazardous situation which, if not avoided, could result in vehicle damage or minor to moderate injury.) This sign is commonly YELLOW.

Vehicle ID Decals and Plates

RECREATIONAL VEHICLE SERIAL NUMBER, DECALS AND DATA PLATES

The recreational VIN (vehicle identification number), label is mounted on the front lower road side corner of the Travel Trailer.

Vehicle Serial Number Label

The VIN is a computer-generated number based upon pertinent facts about your RV. For example:

Single Axle

MANUFACTURED BY: FOREST RIVER, Inc.		DATE: 5/1/2014		THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.	
VIN: XXXXXXXXXXXXXXXX		TYPE/TYPE: TRA/REM		TRA/REM	
GVWR/GVW: 1704 KG (3757 LB)		RPL1178			
Coupler Size: RPL011085					
FRONT AXLE: 1500 KG (3300 LB)	TRAILER: ST205/75R14C	ENGINE: 14XS.5JJ	COLD INFL. PRESSURE: 345 KPa (50 PSI) SINGLE DUAL	THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.	
INTERIOR WEIGHT: 0 KG (0 LB)			0 HP SINGLE DUAL	CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI LUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.	
TRAILER WEIGHT: 0 KG (0 LB)			0 HP SINGLE DUAL		
			0 HP SINGLE DUAL		

Dual Axle

MANUFACTURED BY: FOREST RIVER, Inc.		DATE: 3/5/2014		THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.	
VIN: XXXXXXXXXXXXXXXX		TYPE/TYPE: TRA/REM		TRA/REM	
GVWR/GVW: 6357 KG (14015 LB)		CRF33RL		CRS211602	
Coupler Size: 2722 KG (6000 LB)		TRAILER: ST235/80R16/E	ENGINE: 16X6.0JJ	COLD INFL. PRESSURE: 552 KPa (80 PSI) SINGLE DUAL	THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
FRONT AXLE: 0 KG (0 LB)				0 HP SINGLE DUAL	CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI LUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.
INTERIOR WEIGHT: 0 KG (0 LB)				0 HP SINGLE DUAL	
TRAILER WEIGHT: 2722 KG (6000 LB)		ST235/80R16/E	16X6.0JJ	552 KPa (80 PSI) SINGLE DUAL	
				0 HP SINGLE DUAL	

NOTE:

Always give model, year and the VIN (vehicle identification number) information when ordering parts. Also, we recommend that you keep a copy of that information separate from the recreational vehicle in the event of theft or vandalism. You may be required to supply a copy of this information to the authorities.

A vehicle data sheet is also supplied with your recreational vehicle listing manufacturer, model, and serial number information for major factory-installed appliances and accessories. A separate copy of this information could be useful to you in the event of theft, vandalism or disaster and also when certain service functions may require it. Decals and data plates, placed throughout the recreational vehicle, aid in its safe and efficient operation and others give service instructions. Read all decals, data and instruction plates before operating your recreational vehicle. If any decal, data, or instruction plate is damaged, painted over or removed, it should be replaced.

Safety Regulations and Propane

The following warnings are posted throughout your recreational vehicle to provide information on propane safety. They have been installed not only because of the requirement to do so, but also as a constant reminder to occupants of the recreational vehicle to exercise proper caution when using or being around propane appliances and equipment. We are listing them here so you may study them and be sure that you and your family understand and follow them.

⚠ WARNING

Do not place propane cylinders inside the vehicle. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging propane to the atmosphere. Propane is highly flammable. Failure to comply may lead to fire or explosion and result in death or serious injury.

IDENTIFICATION AND SAFETY

DANGER

Propane cooking appliances need fresh air for safe operation. Before operating:

Open vents or windows slightly or turn on the exhaust fan prior to using the cooking appliance. Propane flames consume oxygen which must be replaced to ensure proper combustion. Improper use may result in death or serious injury.

A warning label is located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supplied is limited due to the size of the recreational vehicle, and proper ventilation when using the cooling appliance(s) will avoid dangers of asphyxiation.

DANGER

Do not use propane cooking appliances for comfort heating. Failure to comply may lead to carbon monoxide poisoning which can lead to death or serious injury.

DANGER

Do not store propane containers, gasoline, or other flammable liquids inside the vehicle as a fire or explosion may result.

DANGER

A warning label is located near the propane container. This label reads:

DANGER

Do not fill propane container(s) to more than 80 percent capacity.

A properly filled container will contain approximately 80 percent of its volume as liquid propane. Overfilling the propane container can result in uncontrolled propane flow, which can cause fire or explosion and result in death or serious injury.

DANGER

IF YOU SMELL PROPANE:

1. Extinguish any open flames and all smoking materials.
2. Shut off the propane supply at the container valve(s) or propane supply connection.
3. Do not touch electrical switches.
4. Open doors and other ventilating openings.
5. Leave the area until the odor clears.
6. Have the propane system checked and leakage source corrected before using again. Ignition of flammable vapors could lead to a fire explosion and result in death or serious injury.

Safety Devices

WARNING

Never ignore alarms on safety devices. If the alarm sounds and you are not absolutely certain of the source, get everyone out of the recreational vehicle immediately.

- Always have a plan of escape. Update and practice your escape plan every six months.
- Have a meeting and discuss the plan, showing everyone what to do including guests.
- Do not waste time by picking up valuables or getting dressed. Sometimes seconds count!
- Vacuum any dust off the alarm weekly using the soft brush attachment.
- DO NOT spray cleaning agents or waxes directly onto the detector as it may cause damage to the sensor.

IDENTIFICATION AND SAFETY

Smoke Detector

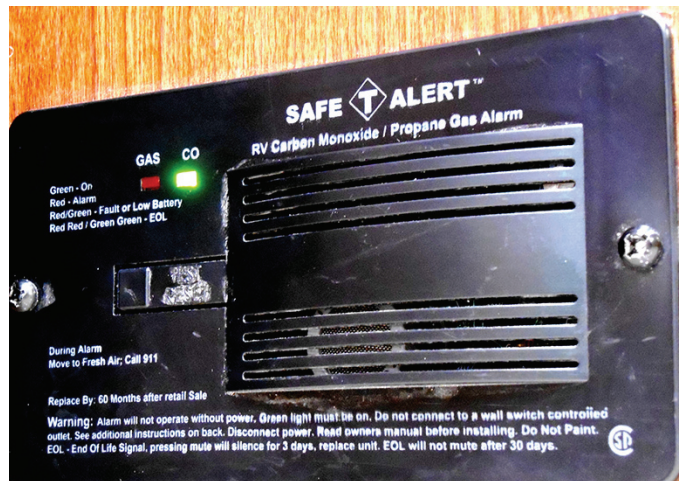


- Smoke alarms may not have time to alarm before the fire causes damage, injury or even death.
- A smoke detector works for only detecting smoke, not fire.
- The alarm will sound only if smoke reaches the sensor.
- Check the battery/s at least once a week while the RV is in use.
- This unit will not alert hearing-impaired residents. (Special alarms with flashing strobe lights are needed for the hearing impaired.)
- Smoke alarms have a limited life and are not foolproof.
- Never attempt to repair this unit; replace if faulty.
- Never disconnect the battery to silence the alarm.

⚠ WARNING

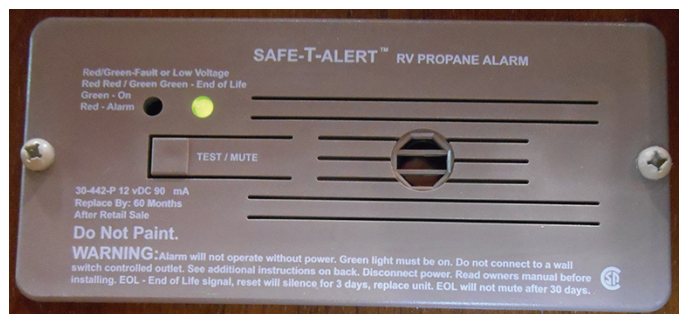
Smoke, propane and CO alarms may have an expiration date. Please consult the individual Owner's Manual or on-line at www.forestriverinc.com.

CO Detector



- The carbon monoxide detector is designed to detect carbon monoxide from any source of combustion. It is NOT designed to detect smoke, fire or any other gases.
- This detector doesn't work without batteries. DO NOT remove batteries except for replacement.
- Test alarm each week while RV is in use and before beginning a trip. Press the 'TEST' button. If the alarm fails to sound, replace the unit immediately. DO NOT attempt to repair.
- For more information, please consult the individual Owner's Manual or on-line at www.forestriverinc.com.

Propane Detector



- This detector senses propane in the air, not smoke or fire or other gases. It detects the presence of propane at the sensor; explosive gas may be present in other areas.
- Test your propane detector weekly. If the alarm is located behind a closed door, it may not be heard.
- DO NOT attempt to repair the detector. If it fails the test, change batteries. If it still does not function properly, replace the entire unit.
- For more information, please consult the individual Owner's Manual or on-line at www.forestriverinc.com.

Fire Safety

Fire safety is an important part of owning a recreational vehicle. The following basic rules of fire prevention can help eliminate the possibility of a fire.

1. Never store flammable liquids in the recreational vehicle.
2. Never leave cooking food unattended.
3. Never smoke in bed and always use an ashtray.
4. Never allow children to play with propane or electrical equipment.
5. Never use an open flame as a flashlight.
6. Have faulty or damaged wiring and electrical components repaired immediately.
7. Never overload electrical circuits.
8. Locate any propane leaks and have them repaired immediately.
9. Keep cooking surfaces clean and free from debris.
10. Don't allow rubbish to accumulate.
11. Never clean with a flammable substance.
12. Spray fabrics annually with a flame retardant.

NOTE:

Be sure that everyone in your RV is familiar with the location of all exits, including exit windows.

NOTE:

Make sure everyone is familiar with the location and proper operation of all fire extinguishers.

⚠ WARNING

Evacuate everyone from the recreational vehicle immediately.

DO NOT ATTEMPT TO USE WATER TO PUT OUT A FIRE. Water can spread some types of fire, and electrocution is possible.

Leave the vehicle immediately and call the fire department!

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

⚠ WARNING

Portable fuel burning equipment, including wood or charcoal burning grills and stoves, shall not be used inside the vehicle. Doing so may cause a fire, explosion, carbon monoxide poisoning, or asphyxiation.

If you decide it is safe to fight a fire with an extinguisher:

- **Remove the tamper tape which covers the discharge push button (do not shake).**
- **Hold it upright and stand six to ten feet from the fire with a clear path to an exit.**
- **Press the button down completely, aiming at the base of the fire, and spray with quick side to side sweeping motion.**

NOTE:

Use the 'PASS' method. Familiarize yourself and all RV occupants with this procedure:

- **Pull the pin** (some extinguishers may have a cartridge you need to push).
- **Aim the nozzle at the base of the fire.**
- **Squeeze the handle** to release the extinguishing agent.
- **Spray the base of the fire.** (If you aim at the flames, you won't extinguish the fire.)

⚠ DANGER

Avoid inhaling the dry chemicals from the fire extinguisher. Although non-toxic, they could cause temporary irritation. When the fire is out, clean the area as soon as possible. The dry chemicals may cause surface damage if left too long.

Do not use water to extinguish a fire. Water can spread some types of fire, and electrocution is possible.

Underwriter Laboratories classifies fires into three types:

- **Class A:** Fires in wood, paper, fabric, rubber and certain plastics.
- **Class B:** Flammable liquids such as grease, cooking oils, gasoline or kerosene.
- **Class C:** Electrical fires started from live electrical wires, shorted motors/switches.

IDENTIFICATION AND SAFETY

Tire Safety

Use the following information to make tire safety a regular part of your vehicle maintenance routine.

⚠ CAUTION

Safety First-Basic Tire Maintenance

Properly maintained tires improve steering, stopping, traction, and load-carrying capability of your vehicle. Under-inflated tires and overloaded vehicles are major causes of tire failure. Therefore, to avoid flat tires and other types of tire failures, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards and regularly inspect your tires.

Understanding Tire Pressure and Load Limits

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

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

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

When taking the trailer out of storage, inspect the tires thoroughly and be sure there are no cracks in the grooves and no wires showing. Cracks in the sidewall could indicate interior damage or separations in the tire.

Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of the air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure, measured in pounds per square inch (psi), a tire requires to be properly inflated. (This number is also expressed in kilopascals (kPa) which is a metric measuring system used internationally.)

Vehicle manufacturers determine this number based on the vehicle's design load limit, which is the greatest amount of weight a vehicle can safely carry, and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the 'recommended cold inflation pressure'. Tire pressure should always be measured when the tire is cold to get an accurate measurement. A cold tire is one that hasn't been driven on for at least three (3) hours. As you drive, your tires get warmer, causing the air pressure within the tire to increase. Therefore, you cannot get an accurate measurement of tire pressure unless the tire is cold.

Checking Tire Pressure

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

NOTE:

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

- Most tires naturally lose air pressure over time.
- Tires can lose air suddenly if you drive over a pothole or strike the curb when parking.
- With radial tires, it is usually not possible to determine under inflation by visual inspection. For your convenience, purchase a tire pressure gauge to keep in your vehicle.

Tire Safety Tips

NOTE:

Preventing Tire Damage

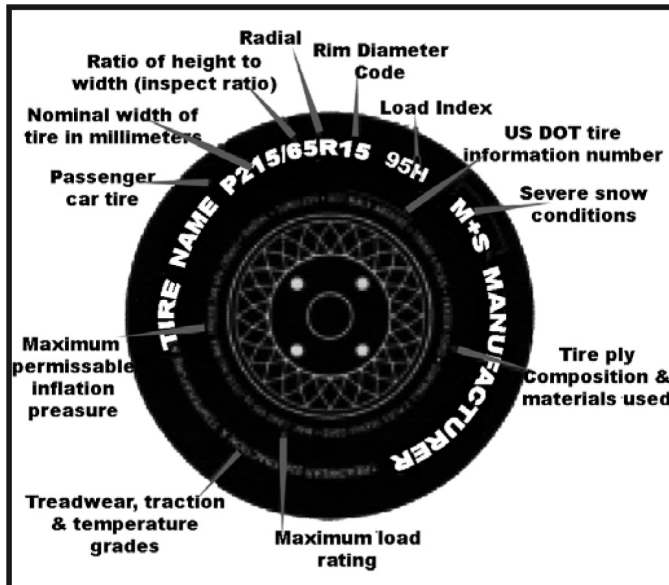
- Slow down if you have to go over a pothole or other object in the road.
- Do not run over foreign objects in the roadway, and try not to strike the curb when parking.

⚠ WARNING

Tire Safety and Maintenance Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and any other foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a trip.
- Do not overload your vehicle. Check the tire information placard for the maximum recommended load for the vehicle.
- If you are towing a trailer, remember that some of the weight of the loaded trailer is transferred to the towing vehicle.

Tire Fundamentals



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

P

Indicates the tire is for passenger vehicles.

Next (3 digit) Number

Gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next (2 digit) Number

Gives the tire's ratio of height to width (known as the aspect ratio). Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R

'R' stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number

This two or three digit number is the tire's load index. It is a measurement of how much weight each tire can support. If you are unsure, contact a local tire dealer.

NOTE:

You may not find this information on all tires since it is not required by law.

M+S

'M+S' or 'M/S' indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

NOTE:

If it becomes necessary to replace a tire and you feel it is a warranty issue, most tire manufacturers require the D.O.T. number be cut out and returned to them with the warranty claim. Otherwise, the warranty could be voided.

U.S. DOT Tire Identification Number

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

Tire Ply Composition and Materials Used

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

Maximum Load Rating

Load rating indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure

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

Treadwear Number

This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter

This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as 'AA', 'A', 'B', and 'C'.

Temperature Letter

This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, under inflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as 'A', 'B', or 'C' (see "Appendix A" for more information).

IDENTIFICATION AND SAFETY

⚠ WARNING

TIRE TIPS

- Make sure all of the lug nuts are secure. Use a torque wrench. Do not guess.
- Inspect tires for uneven wear patterns on the tread, for cracks, for foreign objects or for other signs of wear or trauma.
- Trailers should have the wheel bearings repacked after being in storage for long periods of time.
- Do not overload your vehicle.
- Check the tire information placard for the maximum recommended load for the vehicle. Never exceed the wheel manufacturer's recommendations.
- It is important to maintain proper wheel nut torque to provide safe and secure attachment of the wheel to the hub/drum.

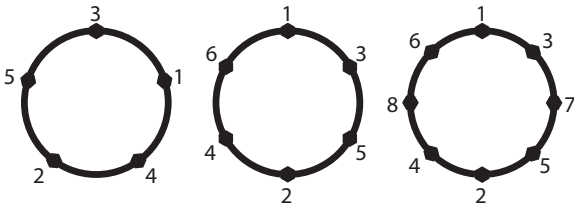
⚠ DANGER

Be sure to use wheel nuts that are compatible with the coin in the wheel. Improperly torqued wheel nuts can cause the wheel to separate from the wheel mounting surface during operation. This could result in property damage, serious personal injury or loss of life. Do not over torque.

⚠ WARNING

Do not place a jack against the trailer underbelly when changing a tire. To avoid damage to your unit, be sure the jack is placed firmly against the chassis frame and place it as close to the spring hangers as possible.

Tighten Each Lug Nut In The Order Shown



Typical torque stages

1ST STAGE 20 TO 25 ft./lbs.

2ND STAGE 55 TO 60 ft/lbs.

3RD STAGE 85 TO 95 ft/lbs.

NOTE:

Start all lug nuts by hand to prevent cross threading. Wheel nut torque requirements vary depending on the size and manufacturer of the wheel. Always use the wheel manufacturer's recommendation but do not exceed 100 ft/lbs. on 1/2 inch studs, or 130 ft/lbs on 9/16 inch studs. Unless otherwise specified by the wheel manufacturer, use a final torque of 85-95 ft/lbs.

NOTE:

It is recommended that wheel bearings be repacked yearly.

WEIGHING, LOADING AND TOWING

Cargo Carrying Capacity

Determining the weight of a vehicle includes more than understanding the load limits of the tires. A weight certification label, located on the forward half of the road side of the unit, will indicate the gross axle weight (GAWR). This is the most weight the fully loaded vehicle can weigh. If there are multiple axles, the GAWR of each axle will be provided. Look in your Yellow Pages under gravel pits, storage companies or recycling facilities to find certified scales. Call in advance to determine if they offer public weighing service, their fees, if any, and hours of operation.

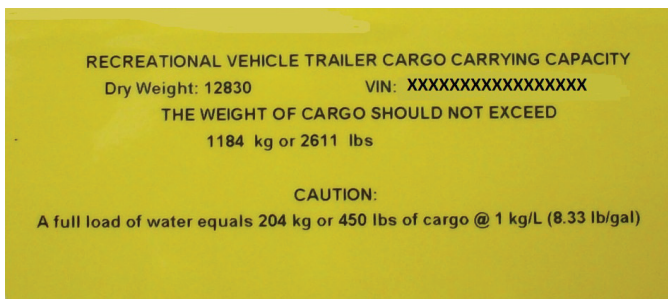
NOTE:

When establishing the cargo capacity, weigh with all water tanks as empty as possible. (do not allow anyone to be in the recreational vehicle when weighing the unit.)

NOTE:

Cargo can be added to the vehicle up to the maximum weight specified on the weight label. The combined weight of the RV and its' cargo can not exceed the stated GVWR.

VEHICLE LOAD LIMITS



Weight Terminology

GVWR - (Gross Vehicle Weight Rating) -the allowable weight, including cargo that can be safely supported by each axle.

GAWR- (Gross Axle Weight Rating) the allowable weight, including cargo, that can be safely supported by each axle

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

CCC - (Cargo Carrying Capacity) - equal to GVWR minus each of the following:

- UVW
- Full fresh (potable water-for drinking and cooking) water weight (including water heater) and full propane weight.

Tongue Weight – The weight of the tongue as it bears down on the hitch of the towing vehicle. Tongue weight should be determined with the RV fully loaded as it would be for travel. DO NOT assume that you can fill all tanks and all storage areas and still be within the GVWR.

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

NOTE:

Before filling the fresh water tank, empty the black and gray tanks. Most campgrounds supply dump stations for this purpose. Doing this will provide more cargo capacity.

NOTE:

If you find that you have exceeded the GVWR of the recreational vehicle, you will have to remove items until you are within the specified limits. After you have determined how much weight you can safely carry, make a list and keep it for future reference. This will limit the amount of time it takes you to get ready for the road.

WEIGHING, LOADING AND TOWING

Weighing Your Travel Trailer

NOTE:

Weighing Tips

- Weights of stored items will vary greatly and will affect total weight of your recreational vehicle. Always weigh the recreational vehicle at a certified weigh station equipped with platform scales.
- Check the telephone directory or with local authorities for the location of weigh stations in your area. If you find that you have exceeded the GVWR of the recreational vehicle, you will have to remove items until you are within the specified limits. If you find that either of the GAWR's has been exceeded, you will need to redistribute the load within the recreational vehicle to meet the specified limits. Plan ahead before loading your RV to ensure that items will be evenly distributed. Not only will the recreational vehicle handle and ride better, you will also have reduced tire wear and increased fuel economy.
- When weighing the recreational vehicle, weigh both right and left hand sides separately. This will ensure that you have not overloaded one side or the other, affecting handling. To avoid possible damage, DO NOT store heavy items near the extreme front or rear ends of the RV.
- Empty the holding tanks before leaving on a trip and as often as possible when traveling to help keep weight reduced. Try to carry only as much water as you will need while traveling. Sometimes, the water tanks can be used to help balance the weight in the recreational vehicle (a gallon of water weighs 8 pounds).
- Secure all items stored inside and outside the recreational vehicle, and be sure all doors and drawers are secure.

NOTE:

Do not attach any type of rack or frame to any recreational vehicle frame, bumper, or chassis part. The alteration to length and/or weight distribution may result in unstable handling, be a safety hazard, or could damage the RV components. Alterations of the sort, without the RV manufacturer's express written consent, may affect the RV warranty.

How To Weigh Your Recreational Vehicle

- With full fuel tanks and a typical passenger load, weigh the tow vehicle separate from the trailer.
- Before weighing the trailer, fill the propane tanks. If you plan to travel with fresh water onboard, the fresh water tank should also be filled to the level you intend to carry when traveling.
- Hitch the trailer and weigh both the trailer and the tow vehicle. Drive onto the scale so that only the tow vehicle (with full fuel and passengers) is on the scales. This weight minus the tow vehicle's weight equals the hitch weight.

- Drive the tow vehicle and the trailer fully onto the scale to get the Gross Combined Vehicle Weight. This weight minus the tow vehicle weight equals the trailer weight. The Gross Vehicle Weight Rating (from the manufacturer's sticker) minus the trailer's weight equals the amount of supplies and personal gear you can carry.

NOTE:

If you have dual axles, you can get a weight for each axle by stopping on the scale with the first axle on the scale and noting the weight. Then drive so that both axles are fully on the scale and note that weight as well. (Weigh masters are accustomed to this procedure and, if you explain what you intend to do, will usually work with you.)

NOTE:

For information regarding hitching to the tow vehicle, please refer to your selling dealer.

Computing Your Load And Load Distribution

To avoid overloading, you must understand that the GVWR is the most weight your unit was designed to carry. The GVWR is the weight of the entire contents of the unit and the full weight on the axles, on the tongue or hitch. DO NOT EXCEED THE GVWR OF THIS UNIT. This information is listed on the "Trailer Weight Information" sticker located on the driver's side (or road side) front corner of the unit. To determine how much cargo weight you can put in your unit, make sure the unit is fairly empty and all tanks have been drained. Take your unit to a weigh station and have the entire unit weighed on the scale. The total weight from the scale subtracted from the GVWR will give you the amount of cargo weight you can load into your unit. If you are still unsure of overloading, you can take the fully loaded unit to a weigh station and have it weighed the same way. The total weight of the unit should never exceed the GVWR of the unit.

Travel Trailer Hitch And Sway Control

To safely tow your new travel trailer, we recommend having a weight distributing hitch with a 2 5/16 ball. It is very important to choose a hitch designed for the particular tow vehicle and have it properly installed. Choosing the correct hitch for use with your unit will enhance the stability and maneuverability of your unit and tow vehicle combination. Forest River recommends you consult with your Forest River dealer for assistance in selecting the proper weight distribution and sway control systems for your application.

A weight distributing hitch is one in which leverage is used to distribute the tongue weight of the trailer between the trailer and the tow vehicle. It consists of the hitch receiver, which attaches to the tow vehicle, and spring bars that provide the necessary leverage for load distribution. A hitch of this type, properly installed and matched to your tow vehicle, will provide a level ride that

WEIGHING, LOADING AND TOWING

can improve braking and steering control, as well as reduce towing strain. Pay particular attention to the relationship between the tongue load limits of your tow vehicle and the hitch that you purchase. Another consideration when choosing a hitch is the addition of a sway control system. Friction and cam-action are the two main types of sway control systems available. Be sure to discuss the addition of sway controls with your dealer and hitch supplier when making the decision to purchase a hitch for your tow vehicle.

DANGER

This unit may become unstable and/or unsafe if towed without proper weight distribution and sway control systems. These should be installed as per the weight distribution and sway control manufacturers' instructions. Again your Forest River dealer should be a valuable resource in selecting the proper weight distribution and sway control systems for your unit.

This will form a cradle that catches the hitch coupler should it come loose. The end connectors should always be connected to the hitch base plate or another location specifically provided for this purpose. **NEVER** attach safety chains by looping around the ball hitch. If the chains are too long, simply twist them until the desired link is obtained.

NOTE:

It is very important to lower the latch and insert the safety pin into the hole.

NOTE:

At no time should the weight of the fully loaded unit exceed the tow vehicle's maximum weight rating.

Safety Chain Installation Instructions

On travel trailers, safety chains should always be connected by crossing them under the trailer tongue. The right chain attaches to the left side and the left chain attaches to the right side.

NOTE:

Leveling your travel trailer

- DO NOT use the stabilizer jacks to raise or lower the trailer.
- DO NOT use the stabilizer jacks to support the total weight of the trailer.

NOTE:

The jacks are only meant to stabilize your trailer in a level position. Attempting to raise the trailer by use of the stabilizer jack can cause damage to the jack, frame or both.

NOTE:

Aftermarket stabilizer stands must be placed only under chassis frame rails.

NOTE:

Always fully retract the jacks before towing the RV.

WARNING

Before using the jacks, be sure to chock the wheels on both sides. Place chocks both in front of and behind the wheels.

Loading Tips

- After you have determined what cargo makes up the allowable GVWR, make a loading diagram of your properly loaded RV.
- Store emergency items, flashlights, flares, tools, electrical cords, first-aid kit, etc., in an easily accessible storage compartment, taking care to keep those items in a waterproof container.
- When loading your RV, remember to distribute the weight evenly so you get the proper amount of weight on the axle(s) and hitch. Remember to also consider the weight of any items you may purchase on your trip.
- Do not place heavy items in the overhead cabinets. They could shift and fall during travel.
- Luggage and similar cargo stored inside the RV must be secured to prevent possible damage if it should become necessary to make a sudden stop.
- Heavy items should be stored close to the floor in the center of the unit. Avoid loading heavy items near either end of the RV or on the rear bumper. Adjust cargo, as needed, to keep the side to side wheel loads equal.

WEIGHING, LOADING AND TOWING

Packing For Travel

Following is a list of items you may find useful to take along:

- First aid kit
- Spare fuses
12-volt automotive type
- Tool kit
Phillips, square head and regular slotted screw drivers, pliers and crescent wrench, a bubble level, open-end wrenches (that fit the water and gas line fittings), a good tire pressure gauge, electrical tape and a flashlight.
- Water hose
Minimum of 25 feet, used to fill water tank and to connect to city water.
- Extension cord
Three or four prong-MUST be rated for the load for which your recreational vehicle was designed, either 30 or 50 amp.
- Holding tank chemicals
- Registration and insurance information (for recreational vehicle and tow vehicle)
- Spare set of keys
- Three pieces of 2" thick x 6" wide x 10" long pieces of wood
For leveling the vehicle in uneven camping areas. Even if you have leveling jacks built in, they may come in handy. The wood can also be used as chocks to help prevent the unit from rolling forward or backward if you are parked on an uneven site.
- Throw rug
Protect the entry area carpet.
- Emergency Contact Phone Numbers

One Final Check

After you have loaded your unit for your trip, weighed it, and made sure you are within the specified weight limits, there's one final check you need to perform. Starting on the outside of the vehicle, perform a visual, walk-around check.

Here are some things to look for:

1. All exterior storage doors and hatches are securely shut and latched.
2. Tail lights, brake lights, headlights and turn signal lights are functioning properly.
3. City water hose is disconnected and stowed. The connection cap has been tightly secured.
4. Holding tank valves are closed and dump outlet cap is securely fastened, and sewer hose is stowed.
5. Power cord is unplugged and stored.
6. TV/satellite antenna is lowered (if equipped).
7. Tire pressure is within specified limits. (Always check tire pressure when tires are cold-at least three hours after being driven on.) Releasing air from a heated tire is dangerous.
8. Lug nuts are tight and wheel covers are secure.
9. All liquid levels are adequate (chassis engine oil, transmission fluid, engine coolant, battery fluid and windshield washer solution).
10. Roof vents are closed.
11. Fresh water tank, sewage holding tank, and propane tank are at correct levels.
12. Entrance door is securely closed and locked, and entry step is retracted.
13. Check the campsite for items left behind and that you left it clean and safe for the next campers.

LEVELING JACKS AND SLIDE ROOM OPERATION

Selecting a Campsite

Selecting a campground is one of the first things you should consider doing before beginning your trip. RV campground maps, with directions and available amenities, are available at most camping stores for a small fee. Below are some tips to help you choose the best campground for your needs.

1. Decide how long you intend to stay at the campground. If you intend to stay for a prolonged period of time, a reservation would ensure your stay at the campground of your choice and that your site is reserved, no matter what time you arrive. As with most reservations, a deposit may be required to hold your space. Most campgrounds provide a 'drop box' where they will place your paperwork if you will be arriving after hours. Your campsite should be marked on the campground map, and many times, included will be local places of interest, shopping locations, and restaurants in the area.
2. If you have a preference, you may request that your campsite be close to the pool, playground, lake, showers or campstore, if available. Or, you may prefer to park away from those more populated areas. If you have researched prior to your trip, you will know what type of amenities the campground has to offer and will be able to make a decision based upon your personal wants or needs.
3. Be sure the campground you choose offers the correct electrical hook-up needed for your recreational vehicle. It will be either a 30 or 50 amp service.
4. Determine if the campground can accommodate the size of your recreational vehicle. Know the length of your recreational vehicle before making a choice. (Smaller, older parks may not be able to accommodate larger recreational vehicles.
5. Ask if the parking site for your recreational vehicle is a PULL-IN or a BACK-IN site. If you have a problem backing your unit, or if you will be arriving after dark to an unfamiliar campground, you may want to request a PULL-IN site. Definitely request a PULL-IN site if you are towing an object behind your recreational vehicle. Keep in mind, during peak traveling seasons, reservations may be the best way to ensure you get the type of site that will suit your needs.
6. Other items you may like to take are lawn chairs, extra towels for the pool, sunscreen, and bug repellent. If staying for a length of time, consider bringing a small roll of indoor-outdoor carpet to put by your recreational vehicle door, to cut down on the amount of dirt and debris that may be tracked into your recreational vehicle, and a small vacuum cleaner. A small, portable hand-held vacuum cleaner draws less amperage than standard size ones.

Campsite Parking

It's best to arrive at the campground before dark especially if you are unfamiliar with the campground and if you need to back into a site. Before parking on your site, inspect it for rocks, slopes or uneven areas. When pulling onto your site, watch for posts, large rocks, low-hanging limbs, or other obstacles. If possible, pull into the site so the electrical outlets and plumbing connections are on the driver's side of the recreational vehicle (most of your recreational vehicle's connections are on the driver's side). Doing so will enable the driver to maneuver the recreational vehicle more easily into a position where it will not interfere with these connections. The driver will also be able to see any obstructions more clearly, which could interfere with the slide rooms or awnings when fully extended.

FOLLOW ALL SAFETY WARNINGS LISTED BELOW BEFORE ATTEMPTING TO OPERATE THE JACKS,

⚠ WARNING

Never expose hands or other parts of the body near hydraulic leaks. High pressure oil leaks may cut and penetrate the skin, causing serious injury.

⚠ WARNING

Never lift the recreational vehicle completely off the ground using only the leveling jacks. Doing so will create an unstable and unsafe condition. It could cause damage to the system as well as serious personal injury.

⚠ WARNING

Never use the leveling jacks to raise the recreational vehicle to change a tire or to perform any other type of repair work. Always use proper equipment or contact a professional.

⚠ CAUTION

Keep people and pets clear of the recreational vehicle while the leveling system is in use.

⚠ CAUTION

Park the recreational vehicle on solid, level ground and clear the site of debris and obstructions. Avoid parking over holes or depressions in the ground. If parking on soft surfaces, utilize load distribution pads under each jack.

LEVELING JACKS AND SLIDE ROOM OPERATION

NOTE:

If you have an automatic leveling system, do not allow people to walk around when attempting to level the recreational vehicle. Doing so could disrupt the leveling jack's sensing mechanism.

Leveling Jacks Operation

Before leaving on a trip, you must ensure your unit is level.

1. You may choose to purchase three levels, a large and a small which could be installed permanently on your unit and an additional one to use temporarily to ensure the trailer is level before attaching the two permanent levels. Install the large level on the front of your unit so it is visible from the driver's seat of the tow vehicle. Install the small level on the side of the trailer so you can also see it from the driver's seat as you operate the tongue jack or landing gear.
2. Since your unit has two axles, cut or purchase three lengths of 2"x8" wood (with no knots or cracks). Some manufacturers recommend 2"x6" pieces of wood. (Since your tires should never hang over the edge of the leveling boards, the 8" gives you a little more room to maneuver.) If you prefer, there are heavy-duty plastic blocks you can purchase to use in place of the wood.
3. To determine the length of board needed, measure the distance between the axle hubs and add 18"-24". (The board should be long enough to allow the tire to rest completely on the board.) If you have difficulty controlling the rig when backing onto the boards, add extra length. The second board should be 5" longer than the first one and the third board should be 5" longer than the second one. You may need various sizes of smaller boards for use under jacks and stabilizers. Another possibility is using plastic blocks that can be purchased at almost any RV camping store. Smaller trailers also may be able to use leveling ramps instead of the boards, but note the weight restrictions on the ramps and compare it to the weight of your trailer.
4. Choose a site that is as level as possible. Be sure the ground is not soft and will support the weight of the trailer.

NOTE:

When it rains, water may collect in the bottom of the window frame and drain out of the weep holes, made for that purpose. If your unit is not level, the water may not drain out properly. This could cause water damage to the window or wall and could breed mold due to condensation.

5. Before unhitching the trailer from the tow vehicle, level the unit from side to side with the appropriate length of wood, being sure to use chocks or wood blocks in front of the wheels to prevent the trailer from rolling. Once it is level side to side, you may unhitch and remove the chocks then level it front to back. Sometimes if you move the RV a foot or two, it will be level enough not to need the wood plank.
6. If additional leveling is necessary, using the leveling boards you made before your trip, place one or more in front of or behind the low side tires. Drive onto the boards and recheck the level. If you use more than one board, stagger them so the wheels roll up the boards one at a time.
7. Use the tongue jack to adjust your front to back level; lower the stabilizers to the ground to help prevent rocking. After stabilizing the unit, be sure the frame is not twisted, buckled or stressed. Be sure that all doors and windows operate freely.

NOTE:

Before moving your RV, be sure all stabilizers (and steps) are removed or fully retracted.

LEVELING JACKS AND SLIDE ROOM OPERATION

Slide Room Operation

Forest River recreational vehicles are equipped with hydraulic or electric slide out systems, or a combination of both. In this manual, you will find general information that will pertain to all operations, and in addition, some more brand specific information. If the following procedure doesn't apply to your recreational vehicle, please consult the slide room manufacturer's owner's manual that you received with your recreational vehicle and follow those directions.

NOTE:

We recommend that your unit be plugged into a 120VAC receptacle or have the generator running, during jack and slide out operation. This will help ensure that the battery maintains proper voltage during operation.

Before Beginning Slide Room Operation

Before extending the room, check the exterior of the unit to be sure the room will not hit anything outside when it is fully extended and the interior to be sure the slide room travel is free from obstruction.

NOTE:

For optimum performance, the slide out system requires full battery current and voltage. The battery must be maintained at full capacity. If the battery is fully charged and you still do not have power, check the terminals and other connections at the battery.

DANGER

Do not perform any maintenance work on your slide out system without first disconnecting the battery. Failure to do so could result in serious personal injury or death.

NOTE:

When operating the slide room, be sure there are no obstructions in the travel path.

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Manual Slide Room Operation

Power Failure

In the event of a power failure or low battery, the slide out room may be operated manually with a crank handle. (If you do not have one, you may order one from your Forest River dealer.) The manual crank shaft is located on the motor transmission housing. Turn the crank counter-clockwise to move the room IN and clockwise to move the room OUT.

NOTE:

Do not make modifications to your recreational vehicle by adding after-market items (gooseneck adapters, hitches, bike racks, ladders, storage racks, etc.) without first obtaining written authorization from Forest River Inc. Doing so may cause damage to your RV and limit, reduce, or void your warranty.

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

LIVING QUARTERS

Prolonged Occupancy

Your recreational vehicle was designed for recreational use and short-term occupancy. If you expect to occupy your RV for an extended period of time, be prepared to deal with condensation and the humid conditions that may be encountered.

Condensation and Humidity

Condensation is the change of water from its gaseous form (water vapor) into liquid water. Just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surfaces of your camper. This condition is increased due to the small volume of space and the airtight construction of your camper.

⚠WARNING

Mold occurs when condensation is left for prolonged periods of time and is extremely difficult to kill. Controlling condensation inside your unit is the best way to avoid not only mold but dampness as well, both of which can cause damage to your RV and/or its contents.

Condensation can infiltrate the insulation, motors, and working parts of appliances or plumbing pipes to name a few. Even though you may not see condensation, it may be inside the walls, cupboards or under the floor, so it is best to take every precaution to avoid it occurring. Generally, an area that is dark, and where moisture can accumulate, is the most likely spot for mold to grow.

It is especially important when storing your RV or if you do not anticipate using it for an extended period of time to air it out. Empty the refrigerator and freezer and dry them completely. Dry the inside of the shower and shower head.

Check for any leaks at the kitchen sink, toilet and bathroom sink. It's also a good idea to check your unit periodically to ensure there is no condensation forming on the windows, which would indicate there is too much moisture in your unit.

If you see signs of excessive condensation, take the necessary steps to remove the moisture to prevent possible damage to the contents or the RV itself.

Below are tips to help contain humidity in your trailer:

1. Keep indoor humidity low-if possible below 60% (ideally between 30 and 50%) relative humidity. Relative humidity can be measured with a moisture or humidity meter. The meter is a small, inexpensive (\$10-\$50) instrument available at most hardware stores. Some larger campground stores may also have the meters.

2. Consider using a small dehumidifier to help rid the unit of moisture.
3. Avoid allowing wet clothing to hang, creating a potential breeding ground for mold.
4. When showering or bathing, open the roof vents or turn on a fan to allow steam and moisture to escape. Wipe down the shower walls to prevent water evaporation.
5. Be sure there are no obstructions in any vents and that all vents are properly sealed. Pay particular attention to appliances that produce moisture, such as air conditioners, shower, oven vents, and clothes dryer vents.
6. Try using the microwave oven instead of the stovetop to boil water or soups for long periods. If you choose to use the stove to boil water or soup, open a window or a vent slightly (even in cold weather) to provide a passage for the air to flow. This will also help restrict the humidity.
7. Try to recirculate the air by using vent fans or small oscillating fans or your furnace fan. If condensation occurs, keep the windows clean in order to prevent the growth of mold and mildew.
8. Do not use a ceramic heater as it provides no air movement, which will not aid in ridding the RV of condensation.

⚠WARNING

Damage caused by mold or mildew is a maintenance issue and is not warrantable. You as the owner, are responsible for proper maintenance of your RV. Controlling humidity inside your RV will help to prevent damage which may occur due to neglect.

NOTE:

When it rains, water may collect in the bottom of the window frame and drain out the weep holes, made for that purpose. If your unit is not level, the water may not drain out properly. This could cause water damage to the window or wall and could breed mold due to condensation.

NOTE:

If you have water and/or mold damage caused by sewage or other contaminated water, it is best to call in a professional who has experience cleaning living spaces damaged by contaminated water.

Propane

DANGER

DO NOT bring or store propane cylinders, gasoline or other flammable liquids inside the vehicle. A fire or explosion could result.

DANGER

DO NOT fill container(s) to more than 80% capacity. Overfilling the propane tanks can result in uncontrolled propane flow which can result in an explosion or fire.

DANGER

NEVER use any other type of propane container than the one furnished with your RV. If the tank must be replaced, check with your dealer for specifications.

DANGER

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

DANGER

DO NOT rely upon being able to smell propane leaks as the odor may not be strong enough to detect.

DANGER

DO NOT use butane or butane mixtures in your propane tank. When you fill your tanks, be sure to use propane only.

DANGER

DO NOT make repairs to the propane tank supply at the propane tank (or source). Except for simple maintenance and occasional tightening of a connection, always take your vehicle to an authorized dealer for propane problems.

DANGER

Do not turn on the propane supply until the propane leaks have been repaired.

DANGER

Do not attempt to adjust or repair the regulator. Adjustments and repairs require specialized training and tools. Contact a qualified propane Service Technician. Failure to follow these instructions could result in fire or explosion.

DANGER

Do not modify your propane system. Do not remove components or replace with components that are not of equal value. The propane system in your recreational vehicle furnishes the fuel for cooking, heating and hot water. Propane can also be used as an alternate energy source for refrigeration. It is a clean, efficient and safe form of energy when properly handled and safety precautions are observed.

WARNING

Always have an authorized propane supplier fill your propane tanks. When the propane container is being filled, DO NOT smoke, strike a match or ignite a lighter. A spark or flame could ignite fumes. Also be sure all burner and pilot flames are out and the service valve is closed.

WARNING

If you detect a sulfur or 'rotten egg' odor, DO NOT turn on any appliances. Shut off all operating appliances. Extinguish any open flames, including cigarettes. DO NOT touch any electrical switches. Open windows and doors and exit the vehicle. Shut off the propane.

The propane is stored with extreme pressure in the tank with space in the tank to allow for expansion into vapor. This vapor is reduced in pressure by passing through a regulator. This reduction in pressure is a two-step process which ensures consistent pressure for use, regardless of outside temperatures, weather or altitude.

LIVING QUARTERS

Propane Regulator

Propane is under high pressure in the tank. The purpose of the regulator is to reduce the pressure inside the tank to allow for safe use. A two-stage automatic regulator, most commonly used on dual tanks, offers the convenience of instant, automatic changeover from the empty to the full tank.

⚠ WARNING

To avoid potential problems, have your propane system checked at least once a year by an authorized service center and after each extended trip.

⚠ WARNING

NEVER test for a leak by lighting a match or having an open flame where you suspect a leak. Take your recreational vehicle to an authorized service center.

Regulator Freeze-Up

The term 'regulator freeze-up' is a misleading one. Regulators and propane do not freeze. However, the moisture that can be contained in the propane will freeze as the propane expands and cools passing through the regulator. This freezing of the moisture in the propane can build up and partially or totally block the passage of the propane through the regulator. Freezing can also occur when outside temperatures are low enough to contribute to the freezing of the moisture in the propane.

The source of the moisture is varied. It can occur at the refinery or propane bulk plant, in the cars used to transport the propane, or even within your own propane tanks. Moisture in a propane tank can occur when a tank service valve is left open, allowing moist air to enter and become trapped.

A two-stage regulator helps reduce the possibility of freeze-up because of its larger orifice size and that heat is being transferred through the walls of two regulators instead of only one.

NOTE:

If freeze-up does occur, shut the propane off at the tank. A frozen regulator may permit propane to flow at high pressure, resulting in leaks at appliances or in the lines. Never attempt to thaw with an open flame. A small light bulb can sometimes be useful to provide heat and aid the thawing process. Once thawed, be sure to take the proper steps to prevent a reoccurrence. Have the system checked by your propane supplier.

Other Cold Weather Factors

As outside temperatures drop, the BTU value of the propane is lessened. The colder propane in the tanks

requires heat from the surrounding air to vaporize. This lowering of the BTU value can significantly affect the performance of the system. Keeping your propane tanks as full as possible in cold weather and reviewing the BTU/hr. rating plates on propane appliances will help ensure proper propane management.



Propane Pigtail

The propane pigtail is a hose used to connect to the regulator on the tank through which the propane fuel flows. This safety feature is generally recognized by the large green nut that attaches to the outside of the valve on the regulator. It limits excessive propane flow and prevents propane from flowing unless the connection is tight.

NOTE:

The connection at the propane tank will shut down in extreme heat (240° - 300° Fahrenheit).

Propane Detector

⚠ DANGER

If the detector senses the presence of propane, the light will turn from green to red, accompanied by an audible alarm. If the alarm sounds:

1. Immediately evacuate all occupants from the recreational vehicle.
2. Extinguish any open flames, pilot lights and all smoking material.
3. DO NOT touch any electrical switches.
4. Shut off the propane supply at the tank.
5. Open doors and windows to ventilate.
6. DO NOT USE THE RANGE HOOD OR OTHER POWER VENTS.
7. The alarm will continue to sound as long as propane is detected or until turned off.

NOTE:

The alarm may sound at times when no propane is present due to household product use, such as aerosol hair-spray, certain cleaners, adhesives, alcohol, etc.

Electrical System Control

⚠ DANGER

Connecting the power cord to a non-grounded or improperly grounded power source can result in a dangerous and possibly fatal electric shock.

NOTE:

The electrical power supply provided for the recreational vehicle is a dual system, operating with 120VAC and/or 12VDC.

The 120VAC power may be provided by either connecting the recreational vehicle to an outside power source when parked, or by use of a recreational vehicle generator. When the 120VAC system is operational, power also passes through a system converter, allowing the full use of all 12VDC functions in the RV. Some 120VAC functions in the RV may include:

- Refrigerator
- Ice maker
- Roof-mounted air conditioner/s
- TV
- Microwave
- Converter
- Electrical outlets
- Some lights
- DVD

Some refrigerators also have the option of running on propane when 120VAC power is not available. When not connected to 120VAC power, the 12VDC system functions can be supplied by the batteries. Batteries are recharged by the power converter when the RV is attached to an outside 120VAC power source, or by the generator. (Be sure you turn the power switch ON; the generator will not charge the batteries or otherwise operate when the power switch is in the OFF position.)

For more information please consult the individual owner's manual or on-line at www.forestriverinc.com.

Connecting to an Outside Power Source

A 30 amp or 50 amp power cord is provided to connect the RV to a grounded power source. The electric utility service connections are located on the driver's side near the rear. The power cord is stored inside the electric utility service compartment. (Depending upon the type of RV you have, the power cord will either be permanently mounted or detachable.)

⚠ WARNING

Never use a two wire extension cord, a cheater adapter with the ground pin removed, or put a lower amperage plug on your power cord in place of the molded plug.

⚠ DANGER

Due to potential danger in failing to heed this warning, the recreational vehicle manufacturer cannot be held responsible should damage, injury or death result from failure to connect the power cord to a properly grounded power source.

General Electrical Information

The electrical power supply provided for the recreational vehicle is a dual system, operating with 120 volt AC and/or 12 volt DC. The 120 volt power may be provided by either connecting the recreational vehicle to an outside power source when parked or by use of a recreational vehicle generator. When the 120 volt system is operational, power also passes through a system converter, allowing the full use of all 12 volt functions in the recreational vehicle.

120 volt functions in the recreational vehicle include the refrigerator, ice maker, roof-mounted air conditioner(s), TV and VCR, microwave oven, converter, outlets for 120 volt operated conveniences, and some lights. Some refrigerators also have the option of running on propane when 120 volt power is not available. All other electrical functions in the RV are supplied with 12 volt power.

When it is not possible to access 120 volt power, the 12 volt system functions can be supplied by the auxiliary batteries. The auxiliary batteries are recharged by the power converter when the recreational vehicle is attached to an outside 120 volt power source or by the generator when it is running.

LIVING QUARTERS

Batteries

The batteries will be located in a separate compartment or in a battery box located on the 'A' frame. It is important to be sure the batteries are kept charged. Take time to turn off all lights or other 12 volt conveniences when not in use. Connect the recreational vehicle to a 120 volt power source when possible to prevent draining the batteries.

The charge condition of the batteries is displayed on the monitor panel, generally located in the Control Center mounted on the wall. To check, press and hold the monitor test switch while reading the charge level on the battery gauge. Charge levels indicated are divided into sections from weak to fully charged.

Battery Maintenance

While Forest River may not have installed your battery, we want to provide you with the following information. Battery maintenance is important. Checking the condition of a battery at regular intervals will help ensure its proper operation. Here are some recommendations for checking and servicing the batteries.

NOTE:

Some batteries are not serviceable; consult the manufacturer's information on the battery you own.

1. Keep the battery mounted securely. Excessive vibration can cause early battery failure.
2. Check the electrolyte level of the auxiliary batteries at regular intervals. Keep each cell filled with distilled water to just above the plates. Once the plates have dried out, they cannot be reactivated, and the capacity of the battery is reduced in direct proportion to the area of plate surface that has become dry. This kind of damage can occur quickly.
3. Keep the battery clean. Corroded terminals make poor contact. Battery sulfating occurs when the battery has been standing in a discharged condition over a long period of time or when the battery has been operated continually in a state of partial discharge.
4. Check the outside condition of the battery. Look for cracks in the case or vent plugs. If the case is cracked, the battery must be replaced. If the vent plugs are cracked, they must be replaced.
5. Watch for over-charging. Three ways to spot over-charging are:
 - a. Active material on the vent cap (heavy deposit of black lead-like material on the underside of the vent cap.
 - b. Excessive use of water.
 - c. By testing voltage regulator output.
6. Make sure the battery hold-downs and carrier are kept clean and free of corrosion.

NOTE:

When removing a battery, disconnect the ground battery clamp first. When installing a battery, always connect the grounded battery clamp last. When a battery needs to be replaced, make sure to replace it with a battery of the same characteristics as the original equipment. Consult your dealer for advice on battery replacement.

Battery Safety

⚠ WARNING

Always shield your eyes when working near batteries. Batteries can explode. Do not smoke or expose battery to electric spark or flame. When charging or discharging, batteries generate hydrogen. Hydrogen and air is a very explosive mixture.

⚠ WARNING

Do not short across the battery terminals. The spark could ignite the gases. Do not wear metal jewelry or a watch when working on a battery.

⚠ DANGER

Disconnect the battery cable and the 120 volt power cord before working on electrical system. Do not reconnect the cables until all work has been completed.

⚠ DANGER

Battery electrolyte is a corrosive, poisonous sulfuric acid. Avoid contact with skin, eyes, clothing or any painted surface.

Battery Charging

The converter also operates as a battery charger when it is connected to a 120 volt power source. If the battery is below its full charge, the converter charger will begin operation at a rate that reflects the level of discharge. When the battery is again fully charged, the converter charger drops its charging level back to a maintenance level to keep the battery fully charged. Battery charging is fully automated. When charging a battery remotely (outside the RV), follow these safety precautions:

DANGER

1. Disconnect the battery from the recreational vehicle.
2. Check electrolyte status before charging. Be sure each cell is properly filled with distilled water.
3. Use care when connecting and disconnecting the cables from chargers. A poor connection can cause an electrical arc, which can result in an explosion.
4. Remove the battery vent caps before charging and be sure that the electrolyte solution does not splash out as a result of charging too quickly. NEVER attempt to open a maintenance free battery.
5. Read the literature supplied by the battery manufacturer and follow all their warnings or precautions as stated in their manual.
6. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Power Converter/Inverter

The converter is used to switch 120 volt electricity, from an external supply or from the generator, to 12 volt electricity. Under normal conditions, the converter requires no maintenance. If the converter does not have a 120 volt supply to convert to 12 volt, it automatically switches the batteries into the electrical circuit to power 12 volt functions. When reconnected to a 120 volt power source, it will again operate from that source.

NOTE:

The converter will run warm, which is normal. If, however, it gets too hot, it will turn itself off. After it cools, it will come back on. In most cases, shut down occurs due to poor ventilation.

NOTE:

A slight hum during operation is also normal for the converter. If you have no 12 volt power and no hum, check to see if 120 volt power to the converter has been interrupted.

Fuses and Circuit Breakers

Ground Fault Circuit Interrupter

The 120VAC outlet in some possible wet locations are equipped with a protective circuit interrupter. The ground fault circuit interrupter (GFCI) is designed to break the flow of current to the protected outlet when an imbalance

of current is detected. Imbalances include electrical leakage in an appliance, such as a shaver or hair dryer, that has developed a weak spot in electrical insulation. The possibility of electrocution exists when using a faulty appliance while at the same time being in contact with an electrical ground, such as water, plumbing, or the earth.

If an imbalance is detected, the GFCI will trip and shut off power to the outlet. Even with GFCI protection, the electrical shock will still be felt, but to a lesser degree. It also does not protect against short circuits or system overloads. Circuit breakers in the main panel, which supply power to the circuit, will trip if either of these conditions exists. The GFCI receptacle should be tested initially when the recreational vehicle is purchased and a least monthly thereafter.

DANGER

Even with GFCI protection, persons with severe heart or other health problems may still be seriously affected by an electrical shock. The GFCI outlet is not a substitute for good electrical safety. It does not protect against contact of the hot and neutral wire at the same time. (The GFCI does not protect any circuit other than the one to which it is connected.)

To test the circuit, use the following procedure:

1. Make sure power to the circuit is ON.
2. Push the test button.
3. The reset button should pop out.
4. All power should be interrupted to outlets protected by the GFCI.
5. Verify by plugging in a light at these outlets and pushing in the red reset button. If the button does not pop out after pushing the test button or GFCI circuit continues to trip, immediately turn off power at the circuit breaker panel and have a qualified electrician service it.

Circuit Breakers

The 120VAC system is protected by circuit breakers. These breakers automatically trip if the circuit load is too heavy or a short circuit occurs. If a circuit breaker has been tripped, do not reset the breaker until the cause of the problem is identified and corrected.

- The generator may have one (4.0 KW) or two (5.5 KW & larger) breakers and a DC fuse on the generator control panel. If an interruption in generator operation occurs, check to see if any of these have been tripped; consult the manuals provided with the generator before attempting maintenance on the generator. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

LIVING QUARTERS

12 Volt Fuses

A 12 volt DC distribution panel is located next to the 120 volt circuit breakers. The panel contains circuits with replaceable fuses for protection of recreational vehicle 12 volt lines. If any line is loaded beyond the capacity of its fuse, the fuse will blow. A portion of the 12 volt load on the line must be turned off to reduce the total load on the line to a level below the capacity of the fuse. Replace the fuse with the same size fuse. DO NOT replace with a larger fuse than indicated.

If this reduction of load on the line does not stop the blowing of the fuses, there may be a short somewhere along the 12 volt line or at a not-fused 12 volt component on the line. Check the 12 volt line and any components along the line. Locate the short and take necessary steps to repair it. If you cannot locate the problem, call a qualified RV technician.

NOTE:

Keep additional fuses on hand in the recreational vehicle replacement fuses are available at gas stations, hardware stores, or automotive supply stores. Remember that the replacement fuse must be the same amperage rating as the original fuse.

NOTE:

Your unit may also be equipped with an Inverter which is used to generate 120 volt power from a 12 volt battery. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

A recreational vehicle plumbing system has the dual ability to be self-contained with onboard storage or use facilities provided by an external pressurized source. The fresh water system consists of those items which are used to deliver water for your use while the waste water system is made up of the drains and tanks which store and remove water that has been used. Components of the plumbing system consist of strong, lightweight, corrosion-resistant materials that provide long life and easy cleaning. By following the instructions outlined here, you can expect efficient operation with a minimum of maintenance.

Fresh Water

Potable (fresh) water is supplied by either the fresh water tank aboard the unit or from an outside source, connected through the city water connection. When using the fresh water tank, the water is pumped through the water lines by means of the water pump. When utilizing an exterior source, such as a campsite water supply, the pump is not needed as the water is already pressurized and will flow through the water supply lines within the trailer.

Water Center Panel

External Hook-Up

Water provided from outside the recreational vehicle is pressurized by the system from which it is delivered. When you connect your recreational vehicle to an outside source, the fresh water tank and the water pump are kept separate from the remainder of the system by in-line check valves.

NOTE:

DO NOT turn the pump on if the fresh water tank is empty. Doing so could cause damage to the pump or a blown circuit may occur.

Attaching to an Outside Source of Water

1. Remove the cap from the fresh water inlet on the side of the recreational vehicle.
2. Attach one end of the fresh water hose to the outside source of water.
3. Connect the other end of the hose to the RV city water inlet.
4. Turn on the outside source of water. Gradually open the hot and cold water at the sinks and tub to clear air from the lines. Close the faucets when the water is flowing freely.

NOTE:

Do not turn on the water pump when using water from an external source. Only use the water pump when obtaining water stored in your fresh water tank.

To Disconnect from the Outside Water Source

1. Turn off the outside source of water.
2. Disconnect the hose from the supply valve and the recreational vehicle inlet.
3. Remove the hose and store it.
4. Reinstall the cap on the recreational vehicle inlet.

When an outside source of water is unavailable, water can be drawn from the fresh water storage tank in the RV. The tank is filled through a gravity controlled water spout on the exterior of the vehicle.

Filling the Fresh Water Tank:

1. Remove the water fill cap.
2. Water can now be added directly to the tank through the fill spout using a known clean hose or bucket, used only for this purpose.
3. When the tank is full, replace the water fill cap. Fill Cap is for filling the tank. The City Water Fill connects to campsite water.

Traveling with Water

When traveling, you may want to drain the tank or keep the quantity of water to a minimum. This will reduce the total weight of the RV for travel. The location of the fresh water and the waste water tank drain valve will vary from unit to unit but is generally located beneath the unit near the respective tank.

Water in the tank can be drained by turning the drain cock perpendicular (vertically) to the RV body. To close the valve, turn the lever parallel (horizontally) to the RV body.



NOTE:

When draining the tanks, be sure the water pump is off.

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NOTE:

When draining the entire onboard fresh water system, be sure to open faucets, water heater drain and system low-point drains to remove all fresh water from the system.

NOTE:

When leaving the RV for extended periods, it is advisable to shut off the water supply at the park spigot.

Monitor Panel/Command Center



While there are several different styles of monitor panels, they all serve the same purpose. They measure and display information regarding levels for water, batteries and propane.

The monitor panel allows you to quickly check the levels in the fresh water and waste water tanks. Electrical sensors at various points on the tanks send signals to the monitor panel. To check fluid levels, press and hold the TEST SWITCH designated for the tanks and read the level indicators on the panel. The indicator is proportioned in quarters with each light indicating the level that the tank contains. Sometimes, residue on the sides of a tank or water with a low mineral content will give a false reading.

Check the levels occasionally when you are sure of the tanks contents and compare it to the reading on the monitor panel. If you are concerned about the accuracy of the monitor panel, have it checked at your local service center.

NOTE:

Remember that the monitor panel has additional functions, such as displaying battery and propane levels.

Water Pump

When using water from the fresh water tank, the system must be pressurized. A self-priming 12 V DC pump is provided to handle this function. A pump ON-OFF switch is located on the monitor panel. The self-contained water pump is a demand system. This means the water pump will automatically turn on when a demand is made on the system.

Initial Start-up System

1. Be sure the tank is filled with water.
2. Open all faucets in the recreational vehicle, both hot and cold.
3. Place the pump control switch in the ON position.
4. Allow time for the hot water tank to fill. Shut off each faucet as the flow becomes steady and free of air. When the last faucet is turned off, the pump should also shut off.
5. The system is now ready for use.

The water pump supplied with your RV is designed to deliver a smooth, consistent flow of water at all ranges of operation while drawing only a low current.

Operation

Pump cycling may be caused by excessive pressure created by one or more of the following, within a plumbing system:

- Low flow from partially open faucet.
- Water filters not on separate feed lines
- Clogged water filters.
- Restrictive elbows and valves are possible in the first 2 feet after the pump.
- Flow restrictors in faucets and shower heads.
- Long lengths of small I.D. (inside diameter).
- If replacing pipe/tubing, be sure it is at least 1/2" I.D. for main lines.

To minimize cycling, consider removing plumbing restrictions or install an accumulator after the pump. Cycling should be minimized to prevent pulsing flow and to achieve maximum pump life.

⚠ DANGER

Do not use automotive antifreeze to winterize potable (drinkable) water systems. Such solutions are highly toxic. Ingestion may cause serious injury or death.

Sanitization

Sanitize the system before initial use, after extended periods of no-use, at least once a year during continuous use, and if there is suspicion that the system has been contaminated.

To sanitize the system: For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

- Prepare a chlorine solution using a gallon of water and ¼ cup of liquid household bleach (5% sodium hypochlorite solution). Use one gallon of solution for each 15 gallons of tank capacity.
- With an empty tank and all faucets and drains closed, pump into the tank, via the potable tank fill, either with a manual or electric water pump. Or pour 1/2 cup of bleach (1/4 cup per 15 gallons of capacity) into the hose before connecting it to the water source. The water source pressure will push the chlorine and water into the tank, making the correct solution when the fresh water tank is full.
- Completely fill the tank with fresh water.
- Switch on the water pump. Open all faucets one at a time until all air is purged and the water flows freely.
- Again, add fresh water to the tank until the water level reaches the fill spout.
- Allow the solution to stand in the tank, undisturbed, for at least three (3) hours.
- Drain the system by opening all faucets and the fresh water tank drain valve while flushing the system with fresh water of drinking quality.
- Continue flushing the system, allowing the water to flow for several minutes.

Close the tank drain valve and all faucets. Refill the system with water of known drinking quality.

Waste Water/Holding Tanks

The waste water system in your recreational vehicle can be described as two separate systems. A gray water system that consists of the drain lines and holding tank for waste water from the sinks and tubs, and a black water system which includes the holding tank and drain for toilet wastes.

Each system is self-contained and allows disposal of waste water at designated dump stations at your convenience.

Components of the gray water systems have drain traps, and both tanks (black tank for toilet waste and gray tank for sinks and showers) are vented to equalize air pressure and disperse odors caused by drain water and wastes outside. Sometimes, the rocking movement of the recreational vehicle while driving may empty the drain traps of their water and allow odors of the gray water tank to enter the RV.

Residue in the drain water lines can also produce odors. To combat gray water holding tank odors, an approved deodorizing agent should be used. An agent that dissolves grease and fats and contains a detergent will help keep tanks and the lines clean and free flowing. You can obtain the deodorizer at most campgrounds and stores that carry camping equipment.

NOTE:

If connecting to a campsite sewer inlet,

- Do not open termination valves until tanks are ¾ full.
- Do not keep black water valve open while parked.

Waste is not flushed directly into the sewer system. Only liquid waste is drained; therefore, water must accumulate and the chemicals in the tank need time to break down solids before they can be released. If draining the gray water tank directly into sewer inlet while parked, be sure to close termination valve for a period of time before leaving, allowing some water to accumulate in the tank to use for flushing drain line and flexible hose.

Toilet

The toilet installed in your recreational vehicle is connected to the pressurized fresh water system. A single lever arrangement controls the flushing and the flow of water into the bowl.

- To add water to the toilet before using, lift the flush lever until the desired water level is reached. (As a general rule, more water is required only when flushing solids.)
- To flush the toilet, push the lever all the way down until the sewage leaves the toilet.
- Release the flush lever. A small amount of water should remain in the bowl.

Be sure to hold the flush lever down long enough to release the contents of the bowl, but not longer than necessary as this will result in excessive water usage.

Unnecessary, frequent flushing of the toilet will quickly deplete your fresh water supply and fill your holding tank. If the black water tank becomes full, you will no longer be able to flush the stool until the tank can be drained. Be sure all occupants and guests understand this operation.

Always use deodorizing agents specifically designed for use in holding tank systems and a good biodegradable tissue paper. These products are available directly from your dealer or any store that sells camp supplies.

Never use chlorine or caustic chemicals such as drain opener or laundry bleach in your toilet.

Never allow foreign objects (non-dissolving items) to be flushed through the toilet.

Don't allow a problem to go unsolved. As soon as you detect a problem, take the necessary steps to correct it. It is also a good idea to carry a few spare parts that will correct a small problem that may develop. These parts can

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be obtained from your dealer or larger campground stores. Refer to the toilet manufacturer's information in your Owner's packet to determine which part you may need, its correct name and part number. (If you have a different toilet than the one described, follow the manufacturer's recommendations for cleaning and maintenance.)

Winterization and De-winterization

When storing your recreational vehicle through periods of freezing weather in an unheated environment, it will be necessary to winterize the water system. Damage to the water system components will result if the proper winterization steps are not taken.

NOTE:

Before using the compressed air method, you will need a special adapter known as a blowout plug. This plug allows compressed air to be delivered through the city water fill. This small, inexpensive adapter is available at most RV supply stores.

⚠ WARNING

Never use automotive antifreeze in your fresh water system. Automotive antifreeze is toxic and not for use in potable (drinkable) water systems.

Winterizing With Compressed Air

1. Purchase 2 gallons of RV non-toxic antifreeze.
2. Drain the fresh water tank and empty the waste water holding tanks.
3. Turn the water heater bypass valve to the bypass position. (This valve is located near the water heater incoming lines at the rear of the water heater. The water heater is usually located in a base cabinet in the kitchen, and it may be necessary to remove an access panel to reach the bypass valve.)
4. Drain the water heater.
5. If you have a water filter system installed, remove the filter from the assembly and discard. (You will need to purchase a new one and install it when de-winterizing your unit.)
6. Open all faucets, including shower head sprayer (if applicable), toilet flushing device and any other water lines that are closed.
7. Turn on the water pump for at least 30 seconds to clear any water from the lines.
8. Connect an air hose with an adapter (blowout plug) to the city water fill connection.
9. Set the pressure to no greater than 30 lbs. and blow out the water lines until no water can be seen coming out of the fixtures and lines.

10. Pour RV antifreeze into drains, p-traps, toilet and tanks.

NOTE:

Do not attempt to start the water heater or use the plumbing system after the system has been winterized. Dewinterize. Flush and sanitize the water system prior to use.

Winterizing With Antifreeze Only

1. Purchase 4-6 gallons of RV approved, non-toxic antifreeze.
2. Drain all tanks (fresh water and sewage tanks).
3. Turn water heater bypass valve to bypass position.
4. Drain water heater.
5. If you have a water filter system installed, remove the filter from the assembly and discard. (You will need to purchase a new one and install it when de-winterizing your unit.)
6. Fill the tank above minimum water pump operation level with the RV antifreeze. (Use of a long funnel may be helpful.)
7. Turn the pump switch 'ON' and open the cold water side of all faucet fixtures. Leave the faucets open until the antifreeze (generally pink in color) flows out of the faucets. Repeat for the hot water side.
8. Flush toilet until antifreeze is visible inside the bowl and pour one gallon of antifreeze down the toilet to winterize the black holding tank.
9. Pour antifreeze down each shower/tub, lavatory sink and kitchen sink to fill p-traps.
10. To winterize gray tank(s), pour one gallon down each related sink drain.

Dewinterizing Your RV

NOTE:

Do not attempt to turn on the water heater or use the plumbing system once the system has been winterized. Dewinterize the water system, flush and sanitize prior to use.

1. Drain all holding tanks (fresh water and sewage).
2. Attach garden hose to fresh water fill and fill tank.
3. Turn 'ON' pump switch and open cold water side of all faucet/shower fixtures. Leave open until the water runs clear (no pink residue). Repeat for the hot water side.
4. Flush toilet until clear water runs into bowl.
5. Dump tanks again.
6. Sanitize the water system. (Refer to that section in this manual.)
7. IF a water filter has been installed, drain the lines, remove the assembly, clean and reinstall using a new filter.

When ready to use the water heater, turn bypass valve to open position to allow water to enter and fill the water heater tank.

Fresh Water Holding Tanks

Due to the vast array of floor plans and the necessary rearranging of plumbing systems, locations will alter, but in general, the holding tanks are located approximately beneath the bathroom area. Drain valves and drain hose storage are usually located on the driver's side.

The storage tanks are constructed of strong, lightweight polyethylene, which minimizes both weight and maintenance. Some models may have two gray water tanks and one black water tank.

Each tank has a separate drain line and dump valve, which permits dumping tanks individually or together. Each tank should be emptied often at dump stations designated for this purpose. These dump stations are found at most campgrounds and are well marked. Many service stations, particularly along interstate highways, also have these facilities. Campground directories list dump-station locations across the nations.

If possible, dump holding tanks before a trip to reduce the gross vehicle weight. Enough water should be kept in the black water tank to cover the bottom to prevent hardening of any residue that may remain. Never dump black water tank until it is 3/4 full. This practice ensures that enough water is in the tank to flush all wastes into sewer line. If necessary, fill the tank to the 3/4 mark with additional water before draining.

Never put anything in the holding tanks other than normal drain water, wastes and biodegradable products. Paper wrappers, gum, cigarettes, etc., no matter how small, should NEVER be placed into either the gray or black tanks.

NOTE:

You can find biodegradable paper products at most stores that sell camping supplies and at campgrounds that have a store on the premises. You can also find chemical substitutes to deposit into the waste tanks if you prefer.

NOTE:

It is important to note that harmful and toxic materials can accumulate if the holding tanks are not regularly drained and thoroughly rinsed. It is also important to use holding tank deodorizing and cleaning agents in the waste water tanks to reduce odors and keep the lines open and free flowing.

Empty the Holding Tanks

1. Remove the sewer drain hose from its storage compartment on the side of the recreational vehicle.
2. Remove the cap from the RV drain and connect the drain hose to it.
3. Attach the other end of the flexible drain line to the dump station inlet. Be sure both ends of the flexible drain line are securely attached.
4. Drain the black water tank first by pulling the termination valve handle toward you. Be sure to allow sufficient time for the tank to completely drain, and then rinse the tank with several gallons of water by depressing the stool pedal or hand flush handle. Close the valve on the stool and let it fill before releasing to the tank. This creates additional force to flush the tank more completely.
5. Drain the gray water tank by pulling the termination valve handle toward you. Draining the gray tank last uses the soapy water in the tank to rinse the drain and flexible hose.
6. When tanks are emptied, close termination valves by pushing handles back to closed positions.
7. Remove flexible drain hose and wash it thoroughly with clean water. Remove the other end from the dump station inlet and replace it in its storage compartment. Secure the sewer hose storage cover, and replace the caps on both the recreational vehicle outlet and the dump station inlet.

NOTE:

Follow these guidelines to help ensure trouble-free operation:

- Never put anything in the black water tank other than biodegradable RV toilet paper.
- Do not put automotive antifreeze, household toilet cleaner or drain cleaners, or any solid material into the waste water system.
- Always use chemicals in the black water system that are made especially for this purpose.
- When cleaning components of the waste water system, use cleaners made for RV systems.
- Always keep the drain cap in place and termination valves close.
- After every third time the holding tanks are emptied, fill and flush both tanks with clean, fresh water a couple of times to keep them clear and clean.

Keeping the black water tank clean allows the monitor panel to accurately assess the status of the tank. Always remember to clean up the dump site before leaving. Never empty your holding tanks directly on the ground or into a river or stream. Do not pollute!

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Water System Maintenance And Troubleshooting

As with any mechanical system, your plumbing is subject to the development of problems. Most of these problems can be greatly reduced, if not eliminated, by following a schedule of planned inspections and maintenance. Neglect of proper maintenance procedures is the usual cause of most water system problems.

Road vibrations and shocks, as well as excessive pressure from some city water sources, are the main physical causes of water system damage. It is important to inspect all plumbing joints and fittings often for cracks and leaks. If left unchecked, water leaking from a plumbing joint can cause considerable damage.

A leak in the fresh water system should be suspected if the pump is running and all faucets and valves are closed. When the leaking fitting has been identified, attempt to stop the leak by tightening the fitting. **DO NOT** over-tighten. Plastic fittings rarely need to be tightened with a wrench. If these fittings leak after tightening by hand, disconnect the fitting and check for dirt, scale, or other foreign substances which may be causing the leak. Clean the fitting thoroughly and reinstall. If leaking persists, shut off the water supply until the fitting can be properly replaced. Check with your dealer for the correct method of replacement and replacement parts.

Proper winterization procedures of plumbing systems will normally be all that is necessary to prevent the damage caused by freezing. Freezing damage can harm any component of the system, including the water tanks, toilet, pump and all piping. Be sure to follow the winterization procedures outlined in this manual. Also be sure to discuss with your dealer or repair center any additional precautions that should be taken to winterize your RV's plumbing system. Local climates vary and winter maintenance needs may be affected.

Be sure to read the literature supplied with plumbing components, such as the water pump, for troubleshooting tips. Also remember that it is possible for an electrical problem to cause water system problems. Lack of power to the pump can be caused by a variety of reasons.

If you are unsure of how to locate and/or repair a plumbing problem, it is best to have your dealer or a qualified plumber who is familiar with the RV water system to inspect the system and perform any repairs needed.

Due to the variety of floor plans available at Forest River and the various shapes and sizes of recreational vehicles, we use many different brands of appliances, designed to fit into the designated space in each recreational vehicle. Therefore, all appliances used cannot be listed in this section. While we will attempt to touch on the major ones, please keep in mind your best resource is the specific appliance's manual that came with your Owner's packet. It will detail the product used in the manufacture of YOUR recreational vehicle. (If, by chance, you don't have the manual you need, many times you can find it on-line, where you will have the option of reading it or printing it for your future use. Be sure you have the model and serial number of your specific appliance handy so you get the most accurate information.)

Each appliance in your RV is warranted by its manufacturer. It is very important that you review ALL the literature provided in the Forest River Owner's packet that came with your recreational vehicle. Fill out and mail any warranty registration cards required by the appliance manufacturers. If you have any questions regarding the operation of the appliances in your unit, contact your selling dealer. Also, please notify your dealer of any shortage of literature you may have.

It is important that you read all the manufacturer's information provided, regarding both operation and maintenance of the appliance. Pay close attention to all safety precautions given, and follow them closely. Keep all literature, including this manual, with the recreational vehicle for easy reference. If service on any appliance is required, contact your dealer or an authorized service representative of the appliance manufacturer. For your convenience, most appliance manufacturers have toll-free service telephone numbers.

Kitchen

Range/Oven

⚠ WARNING

To Prevent Fire Or Smoke Damage

- 1. Keep area around appliance clear and free from combustible materials, gasoline, and other flammable vapors and materials.**
- 2. If appliance is installed near a window, take proper precautions to prevent curtains from blowing over burners.**
- 3. Never leave any items unattended on the cooktop. The hot air from the vent may ignite flammable items and may increase pressure in closed containers, which may cause them to burst.**
- 4. Avoid use or storage of aerosol cans near an appliance. Many are explosive when exposed to heat and may be highly flammable.**
- 5. Do not leave plastic items on the cooktop as they may melt or soften. If this occurs, discard the container and contents as the food could be contaminated.**

Below is an excerpt from the appliance manufacturer's user manual regarding important safety instructions. Refer to the oven/range manufacturer's user manual for more complete instructions. For more information, please consult the individual owner's manual or on-line at **www.forestriverinc.com**.

Read all instructions before using this appliance. The following instructions are based on safety considerations and must be strictly followed to eliminate the potential risks of fire, electric shock or personal injury. Have your appliance installed and properly grounded by a qualified installer and according to the installation instructions. Have the installer show you the location of the gas shut off valve and how to shut it off in an emergency. To ensure proper operation and avoid possible injury or damage to the unit, do not attempt to adjust, repair, service, or replace any part of your appliance. All other servicing should be referred to a qualified installer or service center. Always disconnect power to appliance before servicing.

⚠ WARNING

Never turn exhaust fan on with filter screen removed. Exposed fan blades pose an injury threat. Dirt and grease deposits which are normally trapped by the filter are free to build up in the range hood exhaust duct, creating a fire hazard.

APPLIANCES

⚠ DANGER

It is not safe to use cooking appliances for comfort heating.

⚠ WARNING

The propane oven and burners are operated using propane. Cooking appliances need fresh air for safe operation. Before operating this appliance:

- Open an overhead vent or turn on an exhaust fan, and
- Open a window.

⚠ DANGER

Unlike homes, the amount of oxygen supplied is limited due to the size of the recreational vehicle, and proper ventilation when using the cooking appliance(s) will avoid dangers of carbon monoxide poisoning or asphyxiation.

Lighting Surface Burners

The most common type of RV range is a three or four burner built-in range with a glass oven door. It may light manually or by using piezo ignition, which means there is no pilot light for the range. Be sure the main propane valve on the propane tank is in the 'On' position. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

⚠ DANGER

If the burner does not light within about 4 seconds or if the flame should go out during cooking, turn the burner off. If propane has accumulated and a strong propane odor is detected, open a window and wait 5 minutes for the propane odor to dissipate before relighting the burner.

NOTE:

If the appliance has not been operated for a period of time, the surface burners may be difficult to light due to air in the propane line.

⚠ DANGER

Do not turn the control knob 'ON' and allow propane to escape before lighting the match.

To Bleed Air From Line

- Hold a lighted match next to the burner.
- Turn the surface burner control knob to the LITE position.

- When the burner lights, turn the knob back to the OFF position.
- Depending upon your model, follow the procedure for either 'Match lit' ignition or 'Piezo' ignition.

Match Lit Ignition

1. Place a pan on the burner grate.
2. Hold a lighted match next to the desired surface burner head.
3. Push in and turn the surface burner control knob to the LITE position.
4. When the burner lights, adjust the knob between HI and LOW to select the desired flame size.
5. After cooking, turn the surface burner knob to the OFF position.

Piezo Ignition

1. Place a pan on the burner grate.
2. Push in and turn the surface burner control knob to the LITE position. (IMPORTANT: Only light one surface burner at a time.)
3. Immediately, rotate the TOP BURNER IGNITOR knob to the right (clockwise) several clicks until the burner lights. The burner should light within 6 clicks or one full rotation of the knob.
4. When the burner lights, adjust the surface burner control knob between HI and LOW to select the desired flame size.
5. After cooking, turn the surface burner control knob to the OFF position.

If the piezo igniter is not functioning:

- Be sure all controls are in the OFF position.
- Hold a lighted match to the desired surface burner head (DO NOT turn the control knob ON and allow propane to escape before lighting the match).
- Push in and turn the surface burner control knob to the LITE position.
- When the burner lights, adjust the knob between HI and LOW to select the desired flame size.
- After cooking, turn the knob to the OFF position.

⚠ WARNING

When the recreational vehicle is not in use or while traveling, turn all knobs to the off position and turn off the main propane supply. When using the oven, do not cover bottom or entire rack with aluminum foil.

The oven features pilot ignition. Be sure all control knobs are in the OFF position before supplying propane to the appliance. Be sure propane supply to the appliance is on before lighting pilot or oven burner. If the appliance has not been operated for a period of time, the oven pilot may be difficult to light due to air in the propane line.

To Light Oven Pilot

1. Be sure all controls are in the OFF position.
2. Push in and turn the OVEN knob to the PILOT ON position.
3. Open the oven door and locate the oven pilot (beneath the oven bottom on the left side of the burner). While pushing in the knob, hold a match next to the oven pilot for 10-15 seconds or until a small flame is visible without needing to continue to depress the knob.
4. Once the pilot is lit, leave the OVEN knob in the PILOT ON position if you wish to use the oven. The standing pilot will remain lit if the OVEN knob is left in the PILOT ON position. If the OVEN knob is turned to the OFF position, propane supply to the pilot will be turned off and the standing pilot flame will extinguish. Since each oven has its own personal baking characteristics, do not assume your new oven will perform exactly like your previous one. You may find that the cooking times, oven temperatures and cooking results differ somewhat from your previous range. Allow a period of adjustment.

NOTE:

A delay in the time it takes to light the pilot may signal a need to bleed air from the line.

Oven Knob

NOTE:

The OVEN knob is used to select and maintain the oven temperature. Push in and turn this knob just to the desired temperature. DO NOT set it at a higher temperature then turn it back. Setting it at the desired temperature will provide more accurate oven temperature. Turn this knob to the PILOT ON position if you wish to use the oven. The oven standby pilot will remain lit. Turn the knob to the OFF position if the oven will not be used or when traveling.

Shutdown Instructions

When the recreational vehicle is not in use or while traveling, turn the OVEN knob to the OFF position and turn off the main propane supply. This will turn off the oven pilot.

NOTE:

The maximum recommended pan size is a 13 x 9 x 2" cake pan, 14 x 10 x 2" cookie sheet, or 10" skillet. Do not use canners or oversized cookware. The pan should not be more than one inch larger than the burner grate.

For more information please, consult the individual owner's manual or on-line at www.forestriverinc.com.

Microwave Oven

General Use

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

- Do not attempt to defeat or tamper with safety interlocks.
- Do not place any object between the oven front frame and the door.
- Do not allow residue to build up on sealed surfaces.
- Do not subject the oven door to strain or weight.
- Do not operate the oven if door seals are damaged, if the door is bent, or if door hinges are loose or broken.
- Do not operate the oven empty.
- Do not attempt to dry clothing, newspapers or other material in the oven.
- Do not use recycled paper products as they may contain impurities which may cause sparks or fires.
- Do not hit or strike the control panel with hard objects.

General Operation

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

- The oven light in the microwave oven is on only during operation or if the door is open.
- The oven automatically cooks on full power unless set to a lower power level.
- 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 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 be sure the door is closed securely. (The oven will not start cooking until the door is completely closed or the program has been reset.)

There may be a child safety lock on your oven. (Check the manufacturer's user guide.) To set, press the STOP/CLEAR pad for 3 seconds and the LOCK indicator appears with a beep sound. To cancel, press the STOP/CLEAR pad for 3 seconds and the LOCK indicator disappears with a beep.

Food

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

- Do not use your microwave oven for home canning.
- Do not use the maximum recipe cooking time unless you have previously done so.
- Do not heat eggs in the shell.
- Do not cook potatoes, apples, egg yolks, or sausages without first piercing the surface.
- Do not attempt to deep fry with fat in your microwave oven.

APPLIANCES

Refrigerator

Most RV refrigerators operate on the absorption system. In an absorption refrigeration system, ammonia is liquefied in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulation flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer. When starting the refrigerator for the first time, the cooling cycle may require up to four hours of running time before the cooling unit is fully operational.

Leveling

Leveling is one of the requirements for proper operation with absorption refrigerators. Any time the vehicle is parked for several hours with the refrigerator operating, the vehicle should be comfortably leveled to prevent loss of cooling. If the refrigerator is operated when it is not level and the vehicle is not moving, liquid ammonia will accumulate in sections of the evaporator tubing. This will slow the circulation or in severe cases completely block it, resulting in a loss of cooling. When the vehicle is moving, the rolling and pitching movement of the vehicle will help to keep the liquid ammonia from accumulating.

Automatic Energy Selector System

The refrigerator may be equipped with an automatic energy selector system, either a 2 way or 3 way system. This system can be set, by the user, to be fully automatic (when AUTO mode is selected) or to operate on propane only (AUTO mode is OFF) or DC (battery). If the user turns the refrigerator on AUTO mode, the AES system will automatically select the most suitable energy source available, either 120 volt, propane, or DC.

Auto Mode

When on AUTO mode, the control system will automatically select between 120 volt (AC) and propane or, on a 3 way system, DC current. AC (electricity) has priority over propane, and DC current has priority over both. (If the CHECK indicator lamp is on, the lamp will not turn off until the ON/OFF button is pressed OFF and then ON again.)

Propane Mode

This mode provides propane only. The control system activates the ignition system and attempts to light the burner for a period of approximately 45 seconds, at 2 minute intervals. If unsuccessful, the CHECK indicator lamp will illuminate.

If the CHECK indicator lamp is illuminated on the control panel, the controls have failed to ignite the burner. To restart an ignition attempt when the CHECK lamp is illuminated (or to turn off the CHECK lamp), press the ON/OFF button to OFF and back to ON again. The control system activates the ignition system and makes three attempts to light the burner. If, after the three attempts, it fails to ignite, restart the ignition sequence by again pressing the ON/OFF button to OFF and then back to ON.

DC Mode

When DC mode is chosen, the refrigerator will operate by pulling power from the battery/s. In most cases, the refrigerator controls will continue to operate when the battery is down to 9.6V DC, causing a drain on the battery. WHEN IN AUTO MODE, IF THE REFRIGERATOR FAILS TO OPERATE, REFER TO THE MANUFACTURER'S USER MANUAL PROVIDED WITH THE FOREST RIVER OWNER'S PACKET. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Purging Air From The Lines

If the refrigerator has not been used for a long period of time or if the propane tanks have just been refilled, air may be trapped in the supply lines. Purge the air from the lines by pressing the ON/OFF button to OFF and then back to ON 3-4 times. If repeated attempts fail to start the propane operation, check to make sure the propane tanks are not empty and that all manual shutoff valves in the lines are open.

NOTE:

Do not continue to reset propane operation if the CHECK indicator lamp continues to be illuminated after several tries. If the problem persists, please contact a service center for assistance.

⚠ WARNING

When refueling or parked near gasoline pumps, shut off all propane appliances. Failure to heed this warning could cause a fire or explosion, resulting in death or severe personal injury as well as damage to the camper and/or surrounding area.

Heating/Cooling

Furnace

⚠ WARNING

Before operating the furnace, check the location of the furnace vent to be sure it will not be blocked by the opening of any door on the truck camper (or by exterior items such as a bush or a tree).

Tips to ensure continued safe operation of the furnace

1. Inspect furnace venting. Venting must be free of obstruction and soot.
2. Periodically observe the main burner flame to ensure it is burning with a hard blue flame. If the flame appears yellow or lazy, shut the furnace down. The burner may need to be cleaned or replaced.
3. Keep the furnace area clear of any combustible materials, gasoline or other flammable vapor and liquids.

NOTE:

To properly observe burner operation, the furnace must be removed. This should only be done by your dealer or qualified service center.

⚠ WARNING

Do not install screens over the vent for any reason. Doing so can cause unsafe furnace operation.

⚠ WARNING

Should overheating occur or the propane supply fails to shut off, shut off the manual propane valve to the appliance before shutting off the electrical supply.

⚠ DANGER

Be sure the furnace and all ignition systems are off during refueling and while the vehicle is in motion.

⚠ DANGER

Read the furnace manufacturer's user manual. If the information in the manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury, or loss of life. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

⚠ DANGER

If You Smell Propane

- Extinguish any open flame.
- Evacuate all persons from the vehicle.
- Shut off the propane supply at the propane container or source.
- Do not touch any electrical switch or use the phone or radio in the vehicle.
- Do not start a generator.
- Contact the nearest propane supplier or qualified service center for repairs.
- If you cannot reach a propane supplier or qualified service center, call the fire department.

⚠ DANGER

Do not turn on the propane supply until the propane leak(s) has been repaired. You, as the owner/user, should inspect the furnace monthly during the heating season for presence of soot on the vent. The presence of soot indicates incomplete combustion. Operating the furnace under this condition could lead to serious property damage, personal injury or loss of life. If soot is observed on the vent, immediately shut the furnace down and contact a qualified service center.

APPLIANCES

Thermostat



Many factors influence the ambient temperature inside your RV. The purpose of a thermostat is to keep the air temperature at the level you have selected.

There are several things you can do to help manage the inside temperature to avoid over-stressing your heating and cooling appliances.

Heating

1. Check to be sure there are no gaps in windows or doors that would allow loss of heat.
2. Park the RV so the front or rear of the unit takes the brunt of wind force.
3. Have your furnace checked to ensure it is operating at its highest capacity.
4. Keep all vents free of obstruction.

Setting the temperature and leaving the thermostat on AUTO will allow the device to detect changes in temperature. While some people lower the temperature at night or when leaving the RV, when you return and reset the thermostat, the furnace or air conditioner has to run longer to reach the new temperature you set. It is recommended to set it at a comfortable temperature and leave it.

Cooling

1. Park the RV in a shaded area.
2. Use window shades, blinds or curtains.
3. Keep windows and doors shut or minimize usage.
4. Avoid the use of heat producing appliances.
5. Installing window awnings will reduce heat gain by removing direct exposure to the sun.

Starting the air conditioner in the morning and giving it a head start on the expected high outdoor ambient temperature will greatly improve its ability to maintain the desired indoor temperature.

Whether using the HEATING or the COOLING function of your thermostat, condensation is always an issue. Keeping your RV at a constant temperature helps keep condensation at a minimum. For more information on the effects of condensation on your RV, refer to Living Quarters section.

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Air Conditioner

Your recreational vehicle may be equipped with an optional roof-mounted air conditioner. It operates on 120VAC power and is located in the living/dining area and also in the bedroom area of some models. Your RV may have come factory equipped with the wiring and necessary bracing for the insertion of an air conditioner even if it was purchased without the air conditioner installed at the factory. Check with your dealer for additional information.

Refer to the air conditioner manufacturer's users' manual for complete operating and service instructions. Efficiency when using the air conditioning can be increased by closing all windows and curtains and parking your RV in the shade. Air conditioning consumes a large portion of the electric power available in the recreational vehicle and efficient operation can be an important consideration.

Even though your recreational vehicle is equipped with 30 or 50 amp capabilities, be aware that some campgrounds may offer less than 30 amp service. Check with the campground before utilizing excessive power, which may create a fire hazard or trip breakers, in either the recreational vehicle or the outside power source.

NOTE:

Always turn off the air conditioner (and all electrical appliances) before disconnecting the RV from its 120VAC power source.

NOTE:

If you cover the outside portion of your air conditioner during periods of storage, be sure to remove protective cover before reusing.

Water Heater

NOTE:

Carefully follow the water heater manufacturer's detailed instructions regarding the correct operation of your water heater. Failure to do so could void your warranty.

NOTE:

Water heaters require very little care. However, the most common cause of problems with your water heater is initiating operation before the tank is filled with water. Even running it for a brief period of time without water will damage the electric heating element.

NOTE:

Prior to operating the RV's water heater for the first time, be sure there is water in the water heater tank. Be sure that the water heater bypass valve, if installed, is open to allow water flow into the tank. Next, connect the RV to a water source or turn on the onboard water pump. Open a hot-water tap and wait until water is flowing with no air in the line. When water is flowing from the tap, the water heater tank is full, and it is safe to operate the water heater.

⚠ DANGER

Do not store or use gasoline or other combustible materials or liquids near or adjacent to the water heater or any other appliance.

Automatic Shut Off

The water heater is equipped with a high temperature limit switch, which will shut down the water heater if the temperature reaches above 180 ° F. If the limit switch should fail, the water heater is equipped with a pressure relief valve which is designed to open if the temperature of the water reaches 210 ° F or if excessive pressure builds up. The valve will close automatically once the pressure falls below 50 PSI. Until the pressure falls below 50 PSI, dripping may occur. This is normal and indicates the pressure relief valve is functioning properly by releasing pressure, causing temporary dripping.

Winterizing

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.



NOTE:

If your water heater plumbing system is equipped with a bypass kit, use it to close off the water heater, drain it completely and leave it closed (in the bypass position). If you are introducing antifreeze into the system, be aware that it can be very corrosive to the anode rod causing premature failure and leaving heavy sediment in the tank (if so equipped).

Water Odor

Odor from the water is not a warranty or service issue. Many water supplies contain enough sulphur to produce a 'rotten egg' odor. It is not harmful, only unpleasant. The solution is to chlorinate the water. You may add about 6 ounces of common household liquid bleach per 10 gallons of water in the tank.

Run the chlorinated water throughout the system, opening each faucet one at a time until you smell the chlorine. Do not operate the water system for a couple hours, allowing the chlorine to take care of the problem; however, then you must remove the chlorine by flushing the system with fresh water. You may need to do this more than once. If this process does not remove the smell from the water, you may need to replace the anode rod. You may also consider adding a filtering system as a preventive measure.

Sanitization

For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

⚠ WARNING

IF YOU SMELL PROPANE

- Do not light any appliance.
- Do not touch any electric switch.
- Do not use any telephone in the unit.
- Immediately call your propane supplier from an outside phone. Follow the propane supplier's instructions.

NOTE:

If you cannot reach your propane supplier, call the fire department.

Turn Off Water Heater

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

Storage And Draining

If your RV will be stored during winter months, drain the water heater to prevent damage from freezing.

1. Turn off electrical power to water heater either at the switch or the breaker.
2. Shut off propane supply to water heater.
3. Turn off water pump on main water system.
4. Open both hot and cold water faucets.

Remove anode rod (Suburban only) from tank. Refer to Section 5 of the Suburban water heater manual regarding draining and/or winterizing your water system.

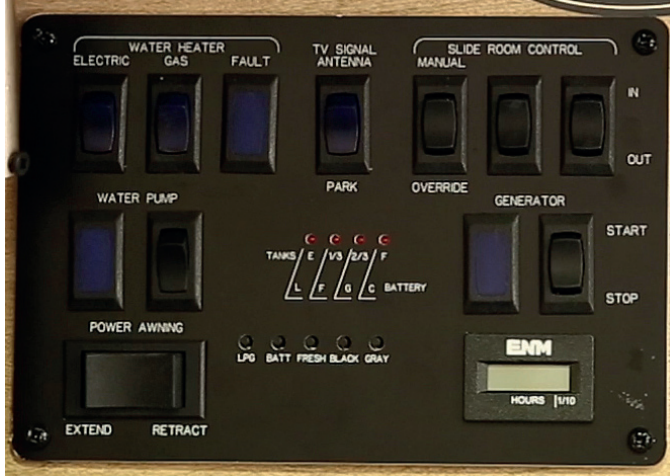
APPLIANCES

Entertainment/Electrical

Antennas

The optional roof-mounted antenna control is located in the ceiling of the lounge/kitchen area and/or in the bedroom. The antenna can only be used when the recreational vehicle is parked.

To Raise The Antenna



Check your parking location for obstructions before raising the antenna. Also be sure the power booster switch is in the on position.

1. Crank the handle (if applicable) in the UP direction as indicated by the arrow on the large control knob.
2. Continue to rotate the handle until you feel resistance (about 13 turns).
3. Do not force the handle beyond the point that resistance is felt.
4. When the antenna is up, fine tune the signal by grasping the large rotating knob, pulling it slightly down and turning it until the clearest picture and sound are available.
5. To lower the antenna, rotate it with the large control knob until the pointer on the control knob lines up with the pointer on the ceiling plate. The antenna cannot be lowered by cranking the handle in the down direction. Continue to rotate the handle until you feel resistance (about 13 turns). To be sure the antenna is working properly, tune the TV receiver to the nearest station and rotate the antenna until you get good picture and sound. Then, turn off the switch on the power booster.

NOTE:

Before leaving the campground, be sure the antenna is lowered.

To lubricate the elevating gear, apply a liberal amount of silicone spray lubricant to the elevating gear with the lift in the DOWN position. Run the lift up and down several times to distribute the lubricant to the gears.

If rotating the antenna becomes difficult, normal operation can be restored by lubricating the bearing surface between the rotating gear housing and the base plate. Any spray type silicone lubricant may be used.

Elevate the antenna and remove the set screw from the rotating gear housing (see illustration). Spray lubricant into hole and around the edges of the gear housing. Rotate the gear housing until the lubricant coats the bearing surfaces and the antenna rotates freely. Reinstall set screw.

Television

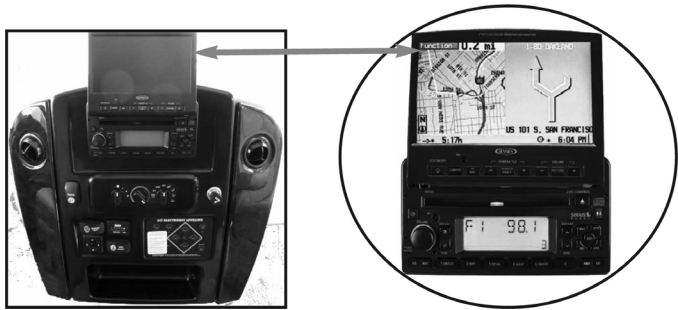
Due to the large selection of televisions used in the manufacturing of Forest River RVs, it is impossible to list all of them in this manual. Therefore, you will find general information that will be applicable to almost all televisions.

For more detailed information regarding the specific television installed in your RV, please refer to the television manufacturer's user guide included in your Forest River Owner's packet. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Your RV is prewired for cable. Televisions run on 12VDC and 120VAC power. Your recreational vehicle must be connected to shore power have the generator (optional) connected for the TV to operate. For more information, please consult the individual owner's manual or on-line at www.forestriverinc.com.

Audio Visual (DVD, Cablebox, Rear Vision System etc.)

Rear Vision, Stereo CD Player, and GPS System (Optional)



1. Power
Press the power button or any other button on the front of the radio (except the eject button) to turn the unit on. Press the power button again to turn the unit off.
2. Mode
Press MOD to select a different mode of operation as indicated on the display panel. Available modes include Radio, CD and CDC. CD mode will only appear in the menu if a CD is loaded. CD changer mode (CDC) will only appear if a CD changer is connected to the unit.
3. Audio Mute
Press MUT to momentarily mute the audio volume. Press MUT again to restore volume to the previous setting.
4. Volume
To increase the volume, rotate the volume control clockwise. To decrease the volume, rotate the volume control counter-clockwise.
5. Sound Adjustment
Press PUSH/AUDIO to step through the following sound adjustment options: BAS (bass), TRE (treble), BAL (balance) and FAD (fader). When the desired option appears in the display, rotate the volume control to adjust that audio feature. When no adjustments have been made for five seconds, the unit will resume normal operation.

NOTE:

Your radio is SiriusXM satellite ready. A tuner and antenna must be purchased to receive the ID number that SiriusXM needs to establish your service. (Tuner and antenna may be purchased from your Forest River dealer.)

NOTE:

If the battery has been disconnected or is dead, all settings must be reset.

Converter/Battery Charger

The power converter is designed to supply the nominal 12VDC filtered power for all 12VDC operated devices. Although the converter is an excellent battery charger, the converter does not require a battery to be connected to it for proper operation. Average charge rate will depend on several variables such as condition of the battery(s), temperature, and the length of time the battery(s) is connected to the converter.

NOTE:

When installing a battery(s), always observe polarity. Connecting a battery with reverse polarity will blow the power converter output fuses.

CARE AND MAINTENANCE

Periodic maintenance and cleaning of your recreational vehicle are necessary to retain the dependability, safety and appearance that will provide you with many miles of trouble-free operation as well as protecting your investment.

Keep good records of maintenance functions performed and be sure to follow all owner obligations as may be required by the chassis manufacturer to keep your warranty in force.

It is also important to note that operating conditions will affect service timetables. Driving in extreme conditions, such as heavy dust, continuous short trips, or start-and-stop heavy traffic, means that the length of time between service appointments will be shortened. Discuss service timetables with both your dealer and chassis service representative.

Preventative maintenance will pay for itself many times over by catching or preventing problems before they occur. Many repair costs are greatly increased by ignoring problems when they are small ones, allowing them to build into larger problems and possibly voiding your warranty due to neglect, misuse or abuse. If left unattended, small problems may also begin to affect other parts and systems of the recreational vehicle.

Fiberglass

The care of fiberglass siding is basically the same as any automotive finish. Any finish will deteriorate with time. Dulling and fading can be increased by exposure to extreme sunlight, air pollutants and excessive moisture. Regular washing will help prevent this from occurring. If surface deterioration, such as yellowing or chalking, occurs, consult with your dealer for proper procedures.

- Wash the exterior monthly with warm water and a mild detergent.
- Avoid spraying water directly into refrigerator and furnace vents.
- Immediately remove bird droppings, tree sap, insects and tar to avoid staining.
- Wax at least once a year with a standard liquid or paste wax.
- Prolonged storage of the unit should be in a sheltered environment when possible.

NOTE:

Physical damage to fiberglass should be addressed immediately to avoid moisture entering through breaks and causing problems with interior walls and components. Cover breaks in the fiberglass with plastic, sealing the edges with tape until proper repairs can be made.

Seals And Adhesives

It is important to maintain the seals and adhesives to prevent moisture from entering and destroying recreational vehicle components. When washing your RV, inspect the seals for signs of drying out and wear. Be

aware that weather and road vibration will have an effect on seals, causing them to dry, crack or separate. If you are unsure what to look for, have your dealer instruct you regarding the correct method for renewing the seals, or you may prefer to have the dealership inspect and reseal your unit if necessary.

NOTE:

Failure to maintain seals through regular maintenance can lead to damage and may be considered abusive treatment under terms of your recreational vehicle warranty.

Water Pump

Water Pump Care And Operation

Frequent pump cycling may be caused by excessive pressure created by one or more of the following within the plumbing system:

- Low flow from partially open faucet.
- Water filters not on separate feed lines.
- Clogged water filters.
- Restrictive elbows and valves are possible in the first 2 feet after the pump.
- Flow restrictors in faucets and showerheads.
- Long lengths of small I.D. (inside diameter) lines.
- If replacing pipe/tubing, be sure it is at least 1/2" I.D. (inside diameter) for main lines.

To minimize cycling, consider removing plumbing restrictions or install an accumulator after the pump. Cycling should be minimized to prevent pulsing flow and to achieve maximum pump life.

The water pump supplied with your RV is designed to deliver a smooth, consistent flow of water at all ranges of operation while drawing only a low current.

Windows and Doors

Check the seals around the windows regularly (at least every 6 months) if sealant is present. Follow the above instructions for care and maintenance of window and door seals and repair as necessary and if applicable.

Adjust and lubricate latches and moving parts annually to ensure windows remain operative. Also check the condition and operation of door locks, adjusting and lubricating as necessary.

Vinyl seals around windows and doors should be cleaned regularly and kept flexible by using a silicone spray or lubricant. Be sure to follow the directions on the product container.

NOTE:

If your roof should become punctured or ripped, cover the puncture or tears to seal out moisture and have it repaired immediately.

⚠ WARNING

Use caution when storing items on the roof. If a factory-installed roof rack and/or ladder are present, the roof has been reinforced. If you have an aftermarket roof rack or ladder, use extreme caution when on the roof. Chances are that your roof has no reinforcement, and you may need to use boards across the roof for temporary reinforcement. (Remember to remove the boards when leaving the roof area.)

Frame/Extrusions/Aluminum Surfaces

Check the condition of the frame regularly. Keep it clean and repaint as necessary, to help avoid rust.

It is especially important to keep underbody components clean when driving your recreational vehicle in the winter, in areas where road salts are used. To help avoid surface pitting, clean and wax all extrusions, when waxing RV sidewalls. Special aluminum cleaners are available to restore the original luster to aluminum surfaces. Be sure to follow the instructions as outlined on the product package.

Roof

Inspection of roof components at least twice a year, is very important to make sure seams and seals are not cracked or worn. Proper maintenance of seals is necessary to keep moisture from entering and causing severe damage such as rot, mold or mildew. If you encounter dry, cracked or weathered seals, reseal or replace as necessary. Check with your dealer for the type of caulking required for rubber roofs and correct methods of resealing or replacing. A mild household soap solution and a soft brush can be used to clean a rubber roof.

⚠ WARNING

If your roof should become punctured or ripped, cover the puncture or tear to seal out moisture and have it repaired immediately.

⚠ WARNING

If a factory installed roof rack and/or ladder are present, the roof has been reinforced. If you add an aftermarket roof rack or ladder, use extreme caution when on the roof. You may need to use boards across the roof for temporary reinforcement. (remember to remove the boards when leaving the roof area.)

Propane System

To ensure proper operation, have the propane system checked frequently for leaks and road damage. The entire system, including regulator pressure, should be checked annually or sooner if you suspect a problem. Have the system checked by a qualified propane service technician using proper equipment. The method of checking the system for leaks and propane safety precautions can be found in the Identification and Safety section.

NOTE:

Line pressure for propane appliances should be checked at least every six months. Most propane suppliers have equipment to test the lines. The optimum line pressure for all RV propane appliances is 11 inches of water column pressure.

Lights

Check the operation of exterior lights often. Check clearance, turn signal, brake and back-up lights to be sure they are working correctly. Replace any cracked, broken or missing light covers to avoid moisture infiltrations and possible damage to the electrical system.

Storage Tips

Winter Precautions

- **Water Systems** - In severe cold, it is wise to monitor the water temperature in the tank and take steps to drain and winterize if necessary. It is also a good idea in severe cold to open lower cabinet doors in the kitchen and bath to allow warm air to circulate around water fixtures. To minimize freezing damage, insulate drain lines exposed to the outside.
- **Food Storage** - If left in an unheated RV for a period of time, canned goods and other foods packed in water should be stored as high as possible since heat rises. Refrigerators can also be used for storage, even when unplugged, as they are well insulated.
- **Heating** - Use only the RV furnace for heating as it is properly vented to the outside. NEVER USE THE RANGE FOR HEATING AS FIRE, CARBON MON-OXIDE OR ASPHYXIATION COULD RESULT.
- **Condensation** - Moisture can collect on inside surfaces during cold weather when inside humidity is high. While the trailer is in use, a family can vaporize up to three gallons of water daily through daily living. Consider using a dehumidifier to remove moisture. Refer to Living Quarters section for additional tips regarding condensation.

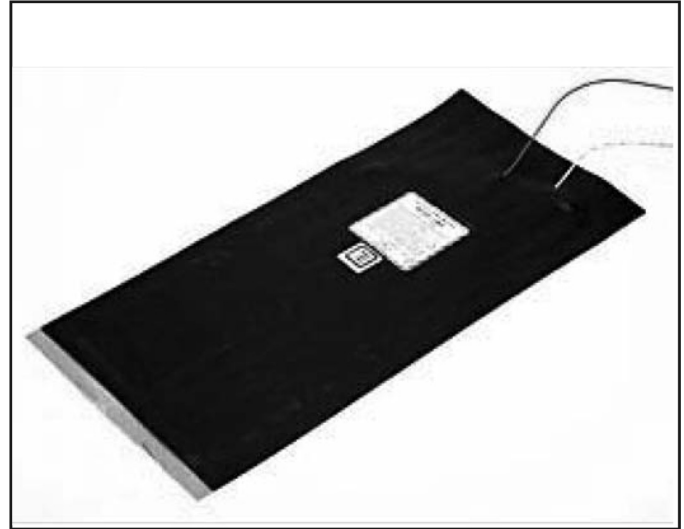
CARE AND MAINTENANCE

Storage Tips

1. Park your RV on a level surface.
2. Winterize the chassis and the generator (optional) as outlined in the chassis's and the generator's owner's manuals.
3. Clean your recreational vehicle thoroughly, inside and out, as previously outlined in the section.
4. Turn off all electrical switches and appliances.
5. Close all shades and curtains. Consider protecting the curtains from sun fade by placing foil or paper between the windows and the screens.
6. Be sure all windows, doors and vents are securely closed. Cover exterior appliance vents to prevent moisture and insects from entering during storage.
7. Check the interior of the RV periodically to be sure leaks have not developed or that condensation has not formed, causing damage to interior components. Condensation can most readily be observed as moisture accumulation on windows and mirrors. To reduce the possibility of condensation, air out the RV occasionally during storage.
8. Be sure that both the chassis and auxiliary batteries have the proper electrolyte level and that they are fully charged. A discharged battery will freeze and crack the case. In storage, a battery will gradually lose charge after 30–45 days, even when disconnected by the battery disconnect switch. We recommend that you check the battery for charge once a month. If the charge is 80% or less, it must be recharged. You may wish to remove the battery and store it in a heated area. However, even when warm, the battery level must be maintained.
9. Be sure the tires are inflated to correct pressure and check periodically.
10. Keep the roof free from snow and ice. Check it periodically and after a heavy snowfall.

Winterize the water systems and protect exterior hoses and lines from freezing. Follow the winterizing procedure outlined in the Plumbing section. Also follow all component manufacturers' instructions regarding their particular products. (If their procedure differs from this manual, follow the component manufacturer's instructions.)

Heating Pads



1. When the outside temperature is near freezing, simply turn ON the holding tank heater's 12 VDC power switch and/or plug in the 120 VAC power cord.
2. There must be liquid in the holding tank, pipes, and elbows when UltraHeat™ heaters are ON.
3. The tank heater immediately starts protecting your holding tank from freezing up.
4. The thermostat on the heater will turn ON the tank heater as soon as the tank temperature drops to 44° F (7° C). The tank heater immediately starts protecting your holding tank. When the temperature in the holding tank rises to 64° F (18° C), the tank heater will automatically turn OFF.
5. If using a generator or other power source, which exceeds the heater's voltage requirements, turn the heater OFF and/or unplug the power cord to avoid eventual damage to the heater's thermostat.
6. Turn the power switch OFF (and/or unplug the power cord on the Dual Voltage Model) when the outside temperature is above freezing.
7. Failure to follow these operating instructions could result in the voiding of your warranty. (The control is generally located in the command center.)

NOTE:

Tank heaters are thermostatically controlled. This product has been tested and designed to be used as a heating device for RV fresh water supply and waste water holding tanks made of standard grade plastics. Ultra-Heat, Inc. assumes no liability for any usage of product for purpose other than what is consistent with the original design and testing.

Care and Maintenance Charts

Storage Preparation

When storing your RV for the winter, certain precautions need to be taken to protect your unit. Be sure to talk with your local dealer concerning any special requirements, for storage, in your particular geographic location. The following steps are general and your dealer can help you choose those which are most appropriate for your needs.

Before Each Trip

Item	Procedure
Windows and Doors	Check vinyl seals when washing exterior.
	Check seals for damage and repair as needed.
	Lubricate door hinges and step components with WD40.
	Adjust and lubricate window latches with WD40.
	Lube all door locks and strike pockets.
Water and Drainage	Check drainage systems for leaks and road damage.
Electrical System	Check GFCI circuits.
Appliances	Remove food and ice from refrigerator after each trip.
Safety Equipment	Test all detector components.
Carpeting	Vacuum after each trip.
Weight and Distribution	Keep within specified load limits.

Monthly

Item	Procedure
Fiberglass Exterior	Wash with warm water and mild detergent.
Water and Drainage	Check hoses, fittings and connections for leaks and wear.
Appliances	Clean fan blades and wash filter on range exhaust hood.
	Check for obstructions and dirt on ext. appliance vents.
Safety Equipment	Check fire extinguisher pressure and condition.
Wood Surfaces	Clean prefinished panels and wood with wood cleaner.

Every 6 Months

Item	Procedure
Fiberglass Exterior	Wax with liquid or paste wax.
Roof and Roof Components	Inspect and reseal as needed.
Axles	Torque mounting bolts to 145-150 foot pounds.
Brakes	Check operation and for uneven wear.

Yearly

Item	Procedure
Roof and Roof Components	Lubricate roof vent mechanism with light oil and clean completely.
Propane System	Have qualified service center check pressures and complete system.
Water and Drainage	Winterize system depending on local conditions.
Safety Equipment	Clean all detector components.
Bearings	Repack wheel bearings yearly.

As Required

Item	Procedure
Propane System	Check for leaks and road damage.
Water and Drainage	Sanitize system.
Electrical System	Maintenance on generator per generator manual.
	Check and service battery/s.
Carpeting	Clean per carpet manufacturer's instructions.
Seats	Lubricate all mechanisms and inspect for proper operation.
	Check all seat belt buckles, release mechanisms and webbing.
Chassis and Components	Follow chassis lubrication and maintenance procedures.
Bearings	Repack wheel bearings yearly.
Brakes	Check operation and for uneven wear.

CARE AND MAINTENANCE

Effects of Formaldehyde

Formaldehyde From Building Materials

Certain building products such as particle board, fiberboard and hardwood plywood are manufactured with an adhesive containing urea-formaldehyde. These products emit a small quantity of formaldehyde into the air.

Other products containing formaldehyde or urea-formaldehyde resins are some carpets, draperies, upholstery, fabrics, deodorizers, cosmetics and permanent press fabrics. Formaldehyde is also a by-product of combustion and is produced by cigarettes and gas appliances.

The concentration of formaldehyde in the indoor air depends upon the quantity and emission rates of all the emitting products in the structure compared to the volume of indoor air and the fresh air ventilation rate. As with other indoor pollutants, ventilation should reduce formaldehyde levels.

⚠ WARNING

Formaldehyde levels in the indoor air can cause temporary eye and respiratory irritation and may aggravate respiratory conditions or allergies.

WaterPur™ Water Treatment System

To help you choose quality water treatment products, the Water Quality Association developed its Gold Seal program. WQA tests water treatment equipment and awards the Gold Seal only to those systems that meet or exceed industry standards for performance, capacity and integrity in removing a variety of drinking water contaminants. WQA Gold Seal testing and validation is available for drinking water treatment units. It provides the following assurances:

1. Performance Testing — measures contaminant reduction capabilities over the life and capacity of the unit.
2. Structural Integrity — measures durability under pressurization beyond the usual demands of home water systems, simulation 10 years of normal use.
3. Materials Safety — confirms a product does not add anything harmful to the water being treated.
4. Literature Review — verifies clarity and accuracy of product literature sales and advertising copy, installation and maintenance instructions, and product labeling.

Gold Seal labeled products must meet the Water Quality Association's Code of Ethics standards. Only the Water Quality Association can award the Gold Seal, and only products meeting comprehensive industry standards can earn it.

For more information, write:
Water Quality Association
4151 Naperville Rd.
Lisle, IL 60532-1088
(a not-for-profit organization)
Visit their website at www.wqa.org.



The WaterPur™ system filters all water going into your RV, not just drinking water, thereby protecting your complete plumbing system from contaminants, providing filtered cold and hot water, and providing filtered water to your bathroom. It also:

- Removes over 99% of chlorine (taste and odor)
- Removes over 99% of turbidity
- Removes over 99% of Giardia and Cryptosporidium
- Does not channel, fluidize, or bypass like a granular activated carbon filter
- Does not permit the passage of cultivated bacteria like a granular activated carbon filter
- Does not contain silver nitrate or any other pesticide or harmful chemical
- Is constructed from all NSF listed materials
- Is rated for 10,000 gallons or one year
- Has a flow rate of 2.5 gallons per minute

The WaterPur™ cartridge is made of activated carbon particles fused into a uniform block, providing micron filtration. Service life is greatly extended by a 15 micron polypropylene prefiltration medium and a layer of 5 micron polypropylene melt blown intermediate filtration medium.

The replaceable cartridge, which is the heart of The WaterPur™ system, has been tested to meet the material requirements of NSG Standards 42, 53 and 58. It has been tested to meet the performance requirements of NSF Standard 42 for Class 1 Chlorine reduction and Standard 53 for Class 1 Turbidity and Cyst reduction.

Sanitize prior to using your RV's fresh water system with The WaterPur™ CC1-10CLW12 installed; the entire system should be sanitized and rinsed. When sanitizing, make sure The WaterPur™ filter cartridge is not in the filter housing.

- Place one ounce of household bleach (such as Clorox) in your RV's fresh water tank for each ten gallons of capacity. (If your tank holds 30 gallons, put 3 ounces of bleach in the tank.) Fill your RV's fresh water tank with potable water.
- SLOWLY open the faucets in the RV and allow water to flow until you smell chlorine at each faucet, and then close the faucet. DO NOT PERMIT THE CHLORINATED WATER TO SPLASH ONTO CLOTHES, WALLS, COUNTERS OR FLOORS. Allow the system to sit overnight.
- Drain the fresh water tank and fill with potable water. Run the faucets until the chlorine smell is gone. Repeat as necessary.

- Shut off the fresh water pump or disconnect from your city water supply. Open the kitchen faucets to remove pressure. Place a shallow pan beneath The WaterPur™ housing by turning counter-clockwise, being careful not to spill the water in the housing. Empty the water from the housing.
- Unwrap the WaterPur™ cartridge and place it in the housing (either side up). Make certain that the 'O' Ring is properly seated, and reattach the housing to the filter cap by turning clockwise. Tighten the housing firmly by hand. DO NOT over-tighten.
- Close the kitchen faucets and either turn on your fresh water pump or your city water supply. Check for leaks at the filter housing. Tighten if necessary. Open the kitchen faucet and allow water to flow for ten minutes. Your WaterPur™ system is now ready to deliver fresh-tasting, filtered water to all of the faucets in your RV.

To winterize your RV's water system, remove The WaterPur™ cartridge from the housing and follow manufacturer's directions for de-winterizing, then replace The WaterPur™ cartridge. The cartridge should be replaced every 12 months or 10,000 gallons, whichever comes first.

An easy way to remember to do this is to replace the cartridge when you de-winterize in the spring. Replace The WaterPur™ cartridge only with a genuine WaterPur™ cartridge available from your Forest River Inc. dealer.

Operational Note: The WaterPur™ cartridge is not to be autoclaved or steam sterilized. Use the WaterPur™ cartridge with microbiologically safe water. Activated carbon filters are not designed to kill or remove bacteria or viruses. Actual results obtained will vary with various combinations of organic contaminants, changes in pH or other conditions encountered in actual use. All information presented is based on data believed to be reliable. It is offered for evaluation and verification, but is not to be considered a warranty of any kind. The contaminants removed by The WaterPur™ cartridge are not necessarily in your water. Some jurisdictions tax, regulate, or restrict devices making health related or aesthetic claims. WaterPur™ makes no claims in those jurisdictions.

Warranty

The WaterPur™ system is warranted against defects in material and workmanship for a period of one year from date of purchase. Warranty does not cover damage due to abuse, neglect, improper installation, exposure to pressure or temperature above or below stated operating parameters, or improper winterizing.

The Seller makes no other warranties of any kind, expressed or implied, concerning this product, including warranties of merchantability or fitness for a particular purpose except that this product should be capable of performing as described in this manual.

Seller's obligation for this product's performance below specifications shall be limited solely to the replacement of product proven defective, at the Seller's sole discretion. Determination of suitability of product of uses contemplated by Buyer shall be the sole responsibility of Buyer. Use of this product constitutes Buyer's acceptance of this limited liability.

Description:

The WaterPur™ model CCI-10CLW12 is a Household Class, Group 2, water filtration device designed for installation in recreational vehicles. It has a micron rating of 1 micron, a capacity of 10,000 gallons of chlorine removal at 2.5 gallons per minute. This capacity was determined under WQA Standard S-200 Test Conditions and may vary with local water characteristics.

The cartridge consists of activated carbon particles fused into a uniform block with enhanced absorptive capacity and efficiency. The cartridge flows in a radial outside-to inside direction providing increased dirt capacity and low pressure drop (8 psid @ 1 gpm service flow, maximum differential pressure of 100 psid and a collapse pressure of 200 psid).

Unlike granular activated carbon (GAC) filters, the extruded carbon will not channel or bypass due to the extreme uniformity of its extruded activated carbon core. Service life is greatly extended by a layer of 15 micron polypropylene spun-bonded prefiltration medium and a second layer of 5 micron polypropylene melt blown filter medium.

Maximum cartridge operating pressure is 125 psid and maximum operating temperature is 1250° F. Minimum operating temperature is 400° F. The housing and cartridge are constructed of 100% NSF listed materials.

Maintenance Schedule

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Definitions

Accessory weight - the combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Curb weight - the weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Maximum loaded vehicle weight - the sum of:

1. Curb weight;
2. Accessory weight;
3. Vehicle capacity weight; and
4. Production options weight.

Light truck (LT) tire - a tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Non-pneumatic rim - a mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly - a non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire - a mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly - a non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight - 68 kilograms times the number of occupants specified in the second column of Table I.

Occupant distribution - distribution of occupants in a vehicle as specified in the third column of Table I.

Passenger car tire - a tire intended for use on passenger cars, multipurpose passenger vehicles, and trucks, that have a gross vehicle weight rating (GVWR) of 10,000 pounds or less.

Production options weight - the combined weight of those installed regular production options weighing over 2.3 kilograms in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Rim - a metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter - nominal diameter of the bead seat.

Rim size designation - rim diameter and width.

Rim type designation - the industry of manufacturer's designation for a rim by style or code.

Rim width - nominal distance between rim flanges.

Vehicle capacity weight - the rated cargo and luggage load plus 68 kilograms times the vehicle's designated seating capacity.

Vehicle maximum load on the tire - that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire - that load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I) and dividing by 2.

Wheel center member - in the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between the tire and the vehicle.

Other regulatory definitions:

Cold Tire Pressure - the tire pressure measured when the tire has not been driven on for at least three (3) hours.

Recommended Tire Pressure - the vehicle manufacturer's recommended cold tire pressure with the vehicle fully loaded.

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