

# CHINOOK RV

Chinook Motor Coach, LLC  
1482 N. Eel River Cemetery Rd.  
Peru, IN 46970

**TRAVEL TRAILER**

**Owner's Manual**



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# INTRODUCTION

Congratulations on your purchase of a Chinook RV! We welcome you to the exciting world of recreational travel. This manual will guide you through Chinook RV's travel trailer product line.

All Chinook RV's are engineered, manufactured, inspected and tested to meet or exceed all current safety standards enforced by the Recreational Vehicle Industrial Association (RVIA).

To assure that you maximize the usage of your camper, we offer this manual to assist and direct you in proper vehicle operation. Please read the entire manual to become familiar with the overall features of your camper and refer to the table of contents in front of the manual for specific areas of interest or concern.

You should also refer to the separate supplemental manuals provided by our various component manufacturers. This manual is not intended as a substitute for these publications and in the event of conflicting instructions, illustrations, or other descriptions, the INFORMATION FURNISHED BY THE RESPECTIVE MANUFACTURER'S PUBLICATIONS SHALL TAKE PRESEDENCE.

When service and maintenance are required, remember that your Chinook RV dealer knows your vehicle best and is interested in your complete satisfaction. They will provide professional maintenance, warranty service, repairs, and any other assistance you may require. For your convenience and handy reference, please fill in the following:

Model: \_\_\_\_\_ Serial No. (VIN) \_\_\_\_\_

Selling Dealer: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

If there is anything you need from us, the manufacturer, please write, call or fax:

Customer Service  
Chinook RV  
1482 N. Eel River Cemetery Rd.  
Peru, IN 46970

Phone           (765) 472-3920  
Fax              (765) 472-3950

## **WARRANTY & SERVICE**

Your new recreational vehicle is protected by a “limited warranty” through a chain of responsible parties, including Chinook RV, our authorized dealer network, our component suppliers, and ultimately you, our retail customer. As a key part of this chain, you have certain obligations to fulfill in order to activate and keep your “limited warranty” in force.

Please read this section carefully so that you will understand what you can expect from Chinook RV and our authorized dealers. This will also help clarify what you must do to validate and maintain your warranty and how to make a warranty claim.

Your first step is to verify that the warranty registration is submitted to us within ten (10) days of purchase either by yourself or your dealer to:

Warranty Registration  
Chinook RV  
1482 N. Eel River Cemetery Rd.  
Peru, IN 46970

Your “limited” one-year warranty automatically starts on the day of purchase, not when you return your warranty registration or use the trailer for the first time.

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### **DEALER RESPONSIBILITIES**

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Our authorized dealers assume several responsibilities to the warranty and to you. Our dealers shall maintain the trailer while in their possession prior to retail sale. They are required to prepare and service your new camper before you take delivery. This operation is generally referred to as a pre-delivery inspection or PDI. A PDI typically includes operational and safety inspection of all systems to ensure a safe and camp-ready vehicle. They are to check and repair as necessary any plumbing, gas or structural leaks, 110 and 12-volt electrical operations, appliance and hardware operations, etc. They should also inspect and note all interior and exterior surfaces for cosmetic and functional blemishes or imperfections. Finally, they are to thoroughly explain the operation of all systems and features of your vehicle. Don't be too bashful to ask questions!

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### **OWNER RESPONSIBILITIES**

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If you have the need to file a claim under guidelines of our warranty, please contact your authorized dealership. They will help you determine whether the problem is a warrantable defect and whether it should be submitted to Chinook RV or one of our component suppliers. The dealer will work with you to get the warranty claim processed

promptly. As outlined in the warranty, several items such as appliances, axles, etc. are not manufactured by, nor warranted by, Chinook RV.

Take a few minutes and review our “Limited Warranty” and discuss any questions with your dealer to prevent future misunderstandings.

When contacting your dealer or Chinook RV, you should have the following specific information readily available:

- 17-digit vehicle identification number (VIN)
- Year, brand and model
- Date of purchase
- Description of the problem
- Conditions relating to the problem (weather, highway, etc.)
- Prior repair history

Remember that your dealer is responsible for providing service for many customers, so try to allow sufficient time if service is required. Provide them with a complete list of service requirements prior to scheduling your appointment. Last minute issues may not have been allowed for by their service writer and may delay return of your trailer. If possible, arrange to leave your trailer at the dealership for repairs. Unexpected problems or parts requirements do occur. Many dealers do not allow customers in their service area due to insurance and safety considerations.

Chinook RV warranty policy only allows dealers to perform warranty service at their physical location. Service calls, transportation charges and other incidental expenses are specifically excluded from warranty coverage. If you are traveling and require service, contact Chinook RV for assistance in locating an authorized facility. The vast majority of RV dealers throughout the United States are authorized to perform warranty service on major appliances and components. The component manufacturer documentation also provides service contact information. Be aware that full restitution for a warrantable repair is not guaranteed if performed by an unauthorized service facility.

Upon completion of your warranty repairs, you must sign a warranty claim form that will be submitted by your dealer for reimbursement to them. Carefully inspect the repairs for completion and function *before* signing your acceptance on the claim form.

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## COMMERCIAL & RESIDENTIAL USE

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Our trailers are not designed or manufactured with the intent to be used for residence or commercial use. Such use will void certain aspects of the warranty.

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## REPORTING SAFETY DEFECTS

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

If NHTSA receives similar complaints, it may open an investigation. If 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 Chinook RV.

To contact NHTSA, you may call either the Auto Safety Hotline toll free at (800) 424-9393 (366-0123 in the Washington, DC area) or write to: NHTSA, US Department of Transportation, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the Hotline.

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## **LIMITED ONE-YEAR WARRANTY**

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Chinook RV warrants each new recreational vehicle it manufactures beginning the time of retail sale by an authorized dealer to be free from substantial defects in materials and workmanship, which will, under normal non-commercial, non-residential use and service, interfere with the performance and function of vehicle. The obligation of Chinook RV under this warranty is limited to repairing or replacing, at its option, any part or parts thereof within twelve (12) months from delivery of such travel or fifth wheel trailer. Repairs shall be provided to the original retail purchaser, upon prepaid delivery to Chinook RV, the retailing dealer, or an authorized Chinook RV servicing facility as scheduling allows.

### EXCLUSIONS & LIMITATIONS

This warranty does not apply to attached components including but not limited to chassis or chassis components, axles, tires, range/oven, water heater, furnace, refrigerator, air conditioner, and other appliances, interior furnishing and cabinet doors, windows and doors, vents, plumbing fixtures or rubber roof located within or on a Chinook RV travel trailer or fifth wheel trailer. These components are warranted by their respective manufacturers.

This warranty specifically excludes recovery for consequential damages to any or all unit structures or appliances caused by customer abuse or negligence, overloading, unauthorized repairs, alterations, or the use of components not supplied by Chinook RV.

This warranty specifically excludes recovery for consequential damages to any or all unit structures or appliances due to failure to obtain repairs in a timely manner.

This warranty specifically excludes recovery for consequential damages to any or all unit structures or appliances due to failure to maintain the trailer as outlined in the owner's manual. This includes but is not limited to structural sealants, paints and lubricants.

This warranty specifically excludes recovery for any incidental or consequential damages to any person or property, incurred expenses, loss of income or use or inconvenience.

This warranty specifically excludes recovery for routine adjustments of components unless required as a direct result of a warrantable repair.

This warranty specifically excludes recovery for repairs to any or all unit structures or appliances not performed within the warranty period unless reported prior to the warranty expiration date and not beyond 30 days of the warranty expiration date.

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

This warranty extends only to the original retail purchaser and is not transferable.

To obtain service, contact your dealer or:

Chinook RV  
1482 N. Eel River Cemetery Rd.  
Peru, Indiana 46970  
(765) 472-3920

## ABOUT THIS MANUAL

This manual is inclusive of our entire product line including travel trailers (TT) and fifth wheel trailers (FW). Most instructions and recommendations will apply to both types and most models. When it is important to differentiate between types and/or models, we will do so. Not every instruction or feature will apply to your trailer.

In our effort to provide the best value, quality and design, Chinook RV will make ongoing changes in our product. With this in mind, there may be discrepancies between the manual and your trailer. If you are uncertain about the operation of any aspect of your trailer, please refer to the separate component manuals accompanying your trailer or consult your dealer.

Throughout this manual items of note are indicated with the following symbols:



SAFETY  
WARNING



GENERAL  
INFORMATION



SERVICE &  
MAINTENANCE

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**SUPPLEMENTAL INFORMATION**


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Supplemental manuals and warranty information for the following component suppliers may be included with your trailer. However inclusion of a document shall not imply that the component is necessarily a feature of your trailer. There may also be warranty registration documents which should be completed and returned to the respective component manufacturers. Below is a list of many of our suppliers and their components.

<b>MANUFACTURER</b>	<b>COMPONENT</b>	<b>DOMETIC</b>	AIR CONDITIONER REFRIGERATOR MICROWAVE AWNING (A&E) TOILET (SEALAND) LP LEAK DETECTOR TOILET POWER ROOF VENT
<b>AIRXCEL</b>	WATER HEATER RANGE/OVEN JACKS & HARDWARE LP LEAK DETECTOR FURNACE (HYDROFLAME) SLIDEOUT		
<b>ARTERRA</b>	CONVERTER	<b>FILON</b>	FIBERGLASS EXTERIOR
<b>DAVE CARTER</b>	BREAK-AWAY SWITCH 7-WAY WIRING HARNESS LIGHTING	<b>HI-SPEC</b>	TIRES
		<b>KIB</b>	MONITOR PANEL
<b>DEHCO</b>	LP REGULATOR FAUCETS	<b>LIPPERT</b>	SLIDEOUT FW HITCH
<b>DEXTER</b>	AXLES BRAKES	<b>MAGNADYNE</b>	TV ANTENNA
<b>DICOR</b>	SUSPENSION RUBBER ROOF	<b>MASTERCRAFT</b>	FURNITURE & UPHOLSTERY
		<b>PENTAIR</b>	WATER PUMP

## TOW VEHICLE & EQUIPMENT

Many vehicles are capable of pulling your Chinook RV trailer. Of course, the RV should be matched to your tow vehicle's size, weight and towing capacity. If you are planning to buy a new tow vehicle – and particularly if you plan to tow your RV in difficult conditions such as mountains or deserts – consult your tow vehicle's manufacturer or dealer for recommendations regarding special equipment required for trailer hauling.

You may need to purchase some of the following special equipment for your new tow vehicle or add these items to your present vehicle:

- Weight Distribution Hitch System or Fifth Wheel Hitch
- Sway Control System
- Brake Controller
- Extended Side View Mirrors
- Heavy Duty Springs
- Heavy Duty Shock Absorbers
- Special Heavy-Duty Tires
- Heavy Duty Turn Light Flasher
- Trailer Electrical Connector
- Heavy Duty Cooling System
- Transmission Oil Cooler
- Auxiliary Battery

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### SELECTING A HITCH – TRAVEL TRAILER

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There are two basic types of tow vehicle hitches which may be considered for travel trailer towing – weight distribution and weight carrying. For trailers with hitch weights up to 200 lbs. *and* gross weights up to 2000 lbs., non-equalizing hitches may be used. Many manufacturers produce quality weight distribution hitches. These hitches are designed to distribute the tongue or hitch weight of your trailer between front and rear axles of your automobile and the trailer axle(s). In addition, the weight distribution torsion bars attached to the hitch provide a measure of sway control. An additional sway control bar(s) may also be needed depending your trailer/tow vehicle configuration. If your trailer continues to sway, other factors may be involved, such as improper load distribution in the trailer, insufficient tow vehicle wheelbase, or incorrect tire inflation of the tow vehicle or the trailer.

The hitch ball should be selected to match the diameter and capacity of the trailer coupler as well as the shank hole diameter of the tow vehicle hitch bar. Do not tow the trailer with an undersized or under-rated hitch ball.



**It is advisable to choose a weight distribution hitch designed specifically to accommodate your trailer's hitch weight and gross weight. Using an under-rated or over-rated hitch for your trailer could cause an unsafe handling condition resulting in physical damage, personal injury or death from an accident.**

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## HOOKING UP – TRAVEL TRAILER

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Hitching your travel trailer to your tow vehicle will be easy after you've practiced a couple of times. First, raise the locking lever on the coupler. Raise the trailer using the tongue jack to a height sufficient for the coupler to clear over the hitch ball. Back the tow vehicle to align the ball directly below the trailer coupler. (A spotter or an identifying mark on the trailer lined up with some point on the tow vehicle will help center the hitch over the ball). Lower the front of the trailer until the coupler engages the ball and secure the coupler latch. The latch should return to a "full closed" position. You may now insert a safety pin or lock (not included) that will prevent accidental release of the latch.

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## SAFETY CHAINS – TRAVEL TRAILER

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The safety chains should be attached to a loop or hitch component designated for such. Be certain there is sufficient "slack" in the chains to allow for turning but not so much that they drag on the road surface. Our chains are of sufficient strength to "hold" the trailer should a break-away occur. In the unlikely event that a break-away should occur, have the chains, attachment points and hooks inspected and replaced if necessary before towing again.



**WARNING: Do not attach the chains around the ball or ball mount. If your ball mount pin is inadvertently disengaged, the safety chains will be ineffective. Do not use the chains to tow the trailer.**

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## SELECTING A HITCH – FIFTH WHEEL TRAILER

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Select a fifth wheel hitch with an adequate capacity to handle the gross vehicle weight of your trailer. Be sure the hitch is installed to allow sufficient clearance between the trailer and the truck's cab and bedrails.

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## HOOKING UP – FIFTH WHEEL TRAILER

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Make sure your tow vehicle's fifth wheel hitch is properly rated and has been installed to allow adequate clearance between the trailer and the truck's cab and bedrails. The hitch and kingpin box should also be aligned such that the trailer is level when hitched and fully loaded. Read, understand and follow your fifth wheel hitch manufacturer's instructions on the correct hitching and unhitching procedure.

Your trailer's landing gear may be equipped with an electrically operated mechanism as well as a manual operation crank. The landing gear jacks are used to raise and lower the front of your trailer while hitching and unhitching and also for fore and aft leveling. Both jacks extend and retract simultaneously. The landing gear legs have separately adjustable inner legs that incorporate locking pins with multiple holes. Before



dropping the inner legs, be sure to first extend the main legs about 6 to 10 inches. Then lower the inner legs to ground level and insert the locking pin. This procedure ensures that you can lower the front of the trailer for leveling after you have unhitched. You may want to place boards under the jack feet if you are parking on soft or wet ground. Proceed to extend the landing gear until the kingpin plate just clears the hitch then follow your hitch manufacturer’s instructions to unhitch.

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## LEVEL TOWING

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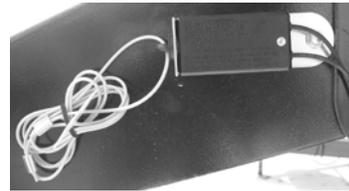
**Make certain the tow vehicle and hitch allow the trailer to be towed level (parallel to the road surface). Unleveled towing can cause overloading of individual suspension components, axles and tires resulting in non-warrantable damage as well as unsafe towing characteristics resulting in accident, personal injury or death.**

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## BREAK-AWAY DEVICE

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Most states require a trailer break-away device. This device, a standard feature on our trailers, is attached to the A-frame near the coupler (TT) or the kingpin box (FW), and it will engage the brakes on the trailer when activated. Attach the cable to the tow vehicle frame being certain no strain is placed on the cable and there is sufficient “slack” to allow for turning.



**WARNING: Do not hook the cable to the safety chain fasteners or the hitch ball. Should the trailer become detached from your tow vehicle, the cable will pull the activating pin and the trailer brakes will be applied. The break-away device requires its own 12-volt power source, such as an auxiliary trailer battery that is not provided by Chinook RV.**

The following warning label is affixed in the proximity of the break-away switch advising the necessity of a battery (not included) for proper operation of the break-away system.

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

LD-101

You should test your break-away switch periodically to insure its proper operation. The first test should preferably be made with an ohmmeter or other continuity tester across the leads of the switch with the switch disconnected. The ohmmeter should indicate no continuity with the plunger in place. The second test is performed by pulling the lanyard and pin from the switch. Make certain that your battery is fully charged and connected. When the plunger is pulled, the trailer brakes should engage. Next, reinsert the plunger and the brakes should disengage. If the brakes do not function as described, replace the break-away switch. Your dealer can assist you with these tests if you are unable to perform them yourself.



**Do not use the break-away switch as a “parking brake”. When energized, the trailer brakes can drain a battery in a relatively short period and at that point the brakes will disengage, and a hazardous situation may develop.**

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### 7 WAY CAR CORD & CONNECTOR

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The trailer’s exterior lighting power is supplied through a 7-way cord at the A-frame or kingpin box. The connector is a standard RV industry configuration. The circuits allow for tail and marker lights, right and left turn lights, brake lights, battery charging and electric brake operation. The connector should be kept free from excessive dirt and corrosion. You can use a non-conductive dielectric silicone compound to protect and lubricate the plug pins. When connecting the plug to your tow vehicle, make certain that there is sufficient “slack” to allow for turning but not so much that the cord drags the highway surface. If the connector or cord are damaged, have them replaced before using the trailer.



WIRE COLOR	FUNCTION
RED	Left Stop & Turn
WHITE	Common Ground
BLUE	Electric Brake
BROWN	Right Stop & Turn
BLACK	Battery Charge
GREEN	Tail & Markers
CENTER	not used

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### RUNNING, TAIL, AND STOP LIGHTS

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All exterior running lights meet ICC specifications and have been designed for maximum visibility and highway safety. Before you start on a trip, the exterior lighting system should be checked. Check the turn signals (both directions), the running lights, taillights, and brake lights.

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## MIRRORS

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Mirrors for towing your travel trailer provide increased visibility for safer turns, lane changes and backing. They are available in several styles and may be permanent or temporary mount mirrors. Check your local and state statutes regarding approved mirrors.

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## OCCUPANCY WHILE TOWING

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**DO NOT TOW THE TRAILER WHILE IT IS OCCUPIED! Personal injury or death is possible if the trailer is towed or moved while occupied. It is also illegal in most states to transport people within the trailer. There are no accommodations for personal restraint provided in any Chinook RV product.**

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## TOOLS AND EQUIPMENT

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We recommend that the following tools and equipment be carried in your trailer and/or tow vehicle:

- A toolbox and assorted tools
- Pliers
- Wrench assortments
- Screwdrivers (standard, square, Philips)
- Lug wrench
- Spare fuses and bulbs
- Bottle of soapy water (to test for LP leaks)
- Tire gauge
- Hammer or mallet
- Levels
- Wheel chocks
- Leveling ramps or boards
- Water hose
- Wastewater hose
- Road flares or reflectors
- Hydraulic or screw type jack
- 30-amp electric extension cord
- 30 to 15-amp emergency adapter
- First aid kit
- Shovel
- Flashlight or lantern
- Plastic pails

## WEIGHTS & LOADING

Your RV has been designed to make maximum use of living and storage space. The equipment and supplies you carry while traveling can be loaded safely provided the additional weight is distributed properly and adequately secured.



**Proper weight distribution within your trailer is an important factor in safe and efficient operation of your RV brakes, suspension, hitch and towing vehicle. CARE MUST BE TAKEN NOT TO OVERLOAD YOUR TRAILER. The total load carrying capacity of your trailer, known as the Gross Vehicle Weight Rating (GVWR) is listed on the weight label located on the inside of an overhead cabinet door normally in the kitchen area. When fully loaded with supplies, water, LP Gas, etc., the total weight of the trailer must not exceed the listed GVWR.**

The GVWR, axle weights, hitch weight as well as the center of gravity of your RV are to be considered to provide safe and easy towing. These basic rules should be followed:

- Stay within your GVWR; preferably travel as light as possible
- Distribute additional weight as evenly as possible
- Store heavy items over the axles and as near the floor as possible
- Secure all cargo to prevent shifting and bouncing
- If possible, empty the wastewater holding tanks before traveling

Heavy items such as canned goods, books and cooking utensils should be placed in the lower storage areas over or slightly ahead of the axle(s). Storage of heavy items on or near the floor will help maintain a lower center of gravity. Use the overhead storage area for lighter objects such as sleeping bags, bedding, clothing and lightweight bulky items.

The weight distribution of your supplies and cargo can affect the highway operation of your rig. If your hitch becomes light due to excessive weight behind the axles, the trailer may sway and weave at road speeds. If your load is too far forward, the excess weight will be transferred to the tow vehicle's rear axle and will actually reduce the weight of the steer axle. This results in the front of the tow vehicle "wandering".

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### STORAGE OF FLAMMABLE SUBSTANCES

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**WARNING: Storage or transport of LP-Gas containers, gasoline or other flammable liquids inside your vehicle – even for short periods of time – presents a risk of fire and/or explosion. All flammable liquids should be stored safely in a well-ventilated area outside your vehicle and in proper containers.**

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## RATED CARGO LOAD

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The cargo carrying capacity (CCC) is the additional weight that can be carried in your unit without exceeding the GVWR, over and above the actual dry weight (UVW) of the trailer

GVW	<p><b>Gross Vehicle Weight</b> The actual weight of the trailer and all of its cargo. This weight will vary depending on the cargo and various fluids. The GVW should never exceed the GVWR</p>
GVWR	<p><b>Gross Vehicle Weight Rating</b> The maximum allowed weight of the trailer and cargo – including the weight carried by the axles and the hitch</p>
GAWR	<p><b>Gross Axle Weight Rating</b> The maximum allowed weight that is to be carried by the axle(s) and related components</p>
UVW	<p><b>Unloaded Vehicle Weight</b> The weight of the trailer as manufactured with no fluids (water, LP, etc.)</p>
CCC	<p><b>Cargo Carrying Capacity</b> The sum of the weights of all fluids, supplies &amp; equipment that the trailer is allowed to carry. This weight can be calculated by subtracting the unloaded vehicle weight (UVW) from the gross vehicle weight rating (GVWR)</p>

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## WEIGHT INFORMATION LABELS

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There are two labels affixed to your trailer regarding weight information.

**RVIA WEIGHT LABEL:** This label is attached to the inside of your trailer (usually on the interior of a galley overhead cabinet door) and GVWR, UVW and CCC.

TRAILER WEIGHT INFORMATION		POUNDS	KILOGRAMS
<b>VIN OR SERIAL NUMBER</b>			
GVWR (GROSS VEHICLE WEIGHT RATING) IS THE MAXIMUM PERMISSIBLE WEIGHT OF THIS TRAILER WHEN FULLY LOADED. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN.			
UVW (UNLOADED VEHICLE WEIGHT) IS THE WEIGHT OF THIS TRAILER AS MANUFACTURED AT THE FACTORY. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN. IF APPLICABLE, IT ALSO INCLUDES FULL GENERATOR FLUIDS, INCLUDING FUEL, ENGINE OIL AND COOLANTS.			
CCC (CARGO CARRYING CAPACITY) IS EQUAL TO GVWR MINUS EACH OF THE FOLLOWING: UVW, FULL FRESH (POTABLE) WATER WEIGHT (INCLUDING WATER HEATER), FULL LP-GAS WEIGHT.			
<b>CARGO CARRYING CAPACITY (CCC) COMPUTATION</b>			
GVWR .....			
MINUS UVW .....			
MINUS FRESH WATER WEIGHT OF	GALLONS @ 8.3 LB/GAL		
MINUS LP-GAS WEIGHT OF	GALLONS @ 4.2 LB/GAL .....		
= CCC FOR THIS TRAILER* .....			
*DEALER INSTALLED EQUIPMENT WILL REDUCE CCC			
CONSULT OWNER MANUAL(S) FOR SPECIFIC WEIGHING INSTRUCTIONS AND TOWING GUIDELINES.			
			CD-132

**FEDERAL CERTIFICATION TAG:** This label is attached to the roadside front corner area of your trailer. It also indicates the GVWR as well as GAWR (front & rear).

MANUFACTURED BY:		DATE:	
GVWR	KG(	LB)	
GAWR ALL	KG(	LB) PER AXLE WITH	TIRE
AT	KPA(	PSI) COLD SINGLE	RIM
THIS VEHICLE CONFORMS TO ALL APPLICABLE US FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.			
VIN:	TYPE: TRAILER	MODEL:	
			FD-304 REV A

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## HOW TO WEIGH THE VEHICLE

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Your trailer can be weighed at any public weigh station. The trailer should be freestanding (unhooked from tow vehicle) and level. Some scales allow for separate axle and hitch weights. The scale operator can assist you with their particular configuration.

## GENERAL OPERATION & USE

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### GETTING FAMILIAR WITH YOUR RIG

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It is important to become comfortable and confident when towing a trailer. You will notice significant differences between driving your vehicle with and without your trailer attached. Acceleration, stopping distances, turning radius, weather related conditions, and visibility are a few of the considerations you will encounter during your ventures onto the highways. Often, the selling dealer will offer a short training session for their customers. Don't hesitate to take them up on the offer. Also, refer to your tow vehicle's owner's manual for specific recommendations and requirements regarding trailer towing.

- Your initial test drive should be in an area with minimal traffic and obstructions. A large vacant parking lot is ideal. Recruit the assistance of a spotter to watch for clearances until you become accustomed to the length, width and **height** of your rig. Ensure your trailer is properly hitched and that mirrors and brakes are adjusted and operating properly.
- Become familiar with acceleration and deceleration at various speeds. You will need to allow more time for both. Get the feel of braking at different speeds and intensities; and note the additional time and distance required. Try braking with the trailer brake controller only at various power levels.
- Make several turns in both directions and observe the larger turning radius. The trailer's tires track a smaller radius than your tow vehicle when negotiating a turn. You may need to make wider sweeping turns, possibly into the opposing traffic lanes and especially at urban and residential intersections. Throughout all turns, monitor traffic in front, behind and alongside of you. Of course you need to signal your intention to turn well before you reach the intersection.

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### HIGHWAY DRIVING

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It is important to allow additional travel time and to be patient. Avoid hard acceleration, abrupt lane changes and hard braking. Your engine and drivetrain have much greater demands placed on them. You can save fuel, extend engine life and arrive at your destination much more relaxed with advanced route planning and additional time allowances.

When changing lanes and passing, know that additional time and distance are required. Be sure you are fully clear of the passed vehicle before merging back into your lane. Remember that many passenger side mirrors are convex, and the distance of objects can be deceiving.

Keep a firm grip on the steering wheel and be prepared for wind gusts from larger vehicles passing and from around buildings, bridges and trees. Try not to over-compensate if the trailer sways. Just keep your tow vehicle straight, decelerate slightly and the trailer should fall back in line. Under extreme windy weather, it is advisable to slow down or even pull over and wait for calmer conditions.

If your engine begins to labor when traveling up a grade, shift into a lower gear. On long upward grades, it is best not to use overdrive. Likewise, when traveling down a hill

or grade, shifting into a lower gear will lessen the need to ride the brake pedal. If you need to slow down on a hill, try using your brake controller to apply only the trailer brakes. This will help prevent jack-knifing.

If you feel a change in the towing characteristics of the trailer such as a sudden sway, jolt or unusual dragging, slow down gently and accelerate back to highway speed. If the condition persists or if the trailer seems to pull to one side or the other, slow down, pull over and stop when it is safe to do so. Check your trailer tires, wheel lugs and suspension for loose or damaged parts. Carefully feel the wheels, tires and brakes for excessive heat. Check your hitch components for loose, misaligned or missing parts. Look for shifted cargo inside your trailer and tow vehicle as proper weight distribution may have changed from movement of cargo due to road vibrations and braking. If you are unable to determine the nature of the problem, proceed only if it is safe to travel at a reduced speed to the nearest service facility. Otherwise, request emergency roadside assistance.

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## **TIRES – GENERAL INFORMATION**

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This portion of the Owner's Manual contains tire safety information as required by 49 CFR 575.6.

Section 1, based in part on the National Highway Traffic Safety Administration's Brochure entitled "Tire Safety – Everything Rides on It," contains the following items:

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:
  - A. Cold inflation pressure
  - B. Vehicle Placard and location on the vehicle
  - C. Adverse safety consequences of under inflation (including tire failure)
  - D. Measuring and adjusting air pressure for proper inflation
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
  - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
  - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing/illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
  - C. Determining compatibility of tire and vehicle load capabilities.
  - D. Adverse safety consequences of overloading on handling and stopping on tires.

Section 2 contains "Steps for Determining Correct Load Limit"

Section 3 contains a Glossary of Tire Terminology, including “cold inflation pressure”, “maximum inflation pressure”, “recommended inflation pressure”, and other non-technical terms.

## SECTION I

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site:

[http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires\\_index.html](http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html)

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

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

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

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

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

### **Safety First—Basic Tire Maintenance**

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

## **Finding Your Vehicle's Recommended Tire Pressure and Load Limits**

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

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

[For TT] Both placards and certification labels are permanently attached to the trailer on the forward half of the left side, and are easily readable from outside the vehicle without moving any part of the vehicle. You can also find the recommended tire pressure and load limit for your vehicle in the vehicle owner's manual.

[For MH] Both placards and certification labels are permanently attached to the vehicle door edge, doorpost, or glove box door. You can also find the recommended tire pressure and load limit for your vehicle in the vehicle owner's manual.

## **Understanding Tire Pressure and Load Limits**

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

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

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

## Checking Tire Pressure

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

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

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

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

## Steps for Maintaining Proper Tire Pressure

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

If you have been driving your vehicle and think that a tire is under inflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly under inflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly under inflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

## **Tire Size**

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

## **Tire Tread**

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

## **Tire Balance and Wheel Alignment**

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

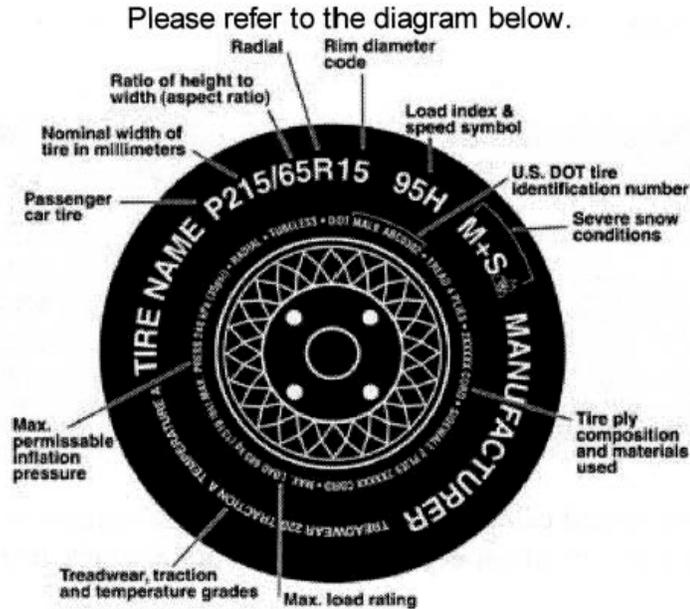
## **Tire Repair**

The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

## **Tire Fundamentals**

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

## Information on Passenger Vehicle Tires



**P** -The "P" indicates the tire is for passenger vehicles.

NOTE: Passenger car tires are not recommended for use on trailers, because the capacity ratings are not marked on the side walls of these tires. In the event a passenger car tire is used, the capacity must be derated by 10%.

**Next number** -This three-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 number** -This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

**R** - The "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. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

**M+S** - The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings.

**Speed Rating** - The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

\* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

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

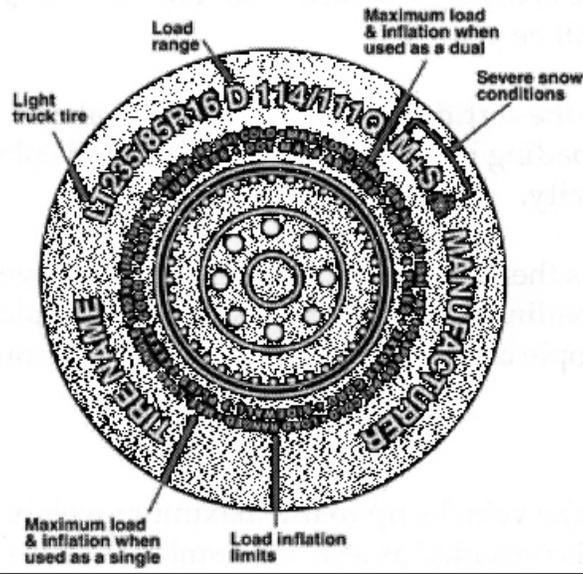
**Tire Ply Composition and Materials Used** - The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel,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

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

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

**Additional Information on Light Truck Tires**

Please refer to the following diagram.



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

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

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

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

**Max. Load Single kg (lbs.) at kPa (psi) Cold** -This information indicates the maximum load and fire pressure when the tire is used as a single.

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

### Vehicle Load Limits

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

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

[For MH] On a motorhome, there is a Federal certification label that is affixed to either the hinge pillar, door-latch post, or the door edge that meets the door-latch post, next to the driver's seating position. If none of these locations is practicable, this label will be located to the left side of the instrument panel, or affixed to the inward-facing surface of the door next to the driver's seating position.

[Both TT and MH] The certification label will indicate the vehicle's gross vehicle weight rating (GVWR). This is the most weight the fully loaded vehicle can weigh. It

will also provide the gross axle weight rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

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

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

### **Cargo Capacities**

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

[For MH] Cargo can be added to the vehicle, up to the maximum weight specified on the placard. For motorized vehicles, the combine weight of passengers and cargo is provided as a single number. If fewer people are traveling, more cargo can be added. If more people are involved, the weight of cargo must be reduced. In any case, remember: the total weight of a fully loaded vehicle, including passengers, cannot exceed the stated GVWR.

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

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

[Both TT and MH] When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a

public scale. Talk to your RV dealer to discuss the weighing methods needed to capture the various weights related to the RV. This would include weights for the following: axles, wheels, hitch or pin (in the case of a trailer) and total weight.

### **How Overloading Affects Your RV and Tires**

The results of overloading can have serious consequences for passenger safety. Too much weight on your vehicle's suspension system can cause spring, shock absorber, or brake failure, handling or steering problems, irregular tire wear, tire failure or other damage.

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

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

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

### **Tire Safety Tips Preventing Tire Damage**

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

### **Tire Safety Checklist**

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

## SECTION 2

### **STEPS FOR DETERMINING CORRECT LOAD LIMIT**

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX lbs." on your vehicles placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs.  $(1400 - 750 (5 \times 150) = 650 \text{ lbs.})$
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this Manual to determine how this reduces the available cargo and luggage capacity of your vehicle.

## SECTION 3

### **GLOSSARY OF TIRE TERMINOLOGY**

**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).

**Bead** - The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

**Bead separation** - This is the breakdown of the bond between components in the bead.

**Bias ply tire** - A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

**Carcass** - The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

**Chunking** - The breaking away of pieces of the tread or sidewall.

**Cold inflation pressure** - The pressure in the tire before you drive.

**Cord** - The strands forming the plies in the tire.

**Cord separation** - The parting of cords from adjacent rubber compounds.

**Cracking** - Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

**CT** - A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

**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.

**Extra load tire** - A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

**Groove** - The space between two adjacent tread ribs.

**Gross Vehicle Weight Rating (GVWR)** - The maximum permissible weight of this fully loaded motorhome.

**Gross Axle Weight Rating (GAWR)** - The value specified as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces.

**Hitch Weight** - The vertical trailer load supported by the hitch ball.

**Inner liner** - The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

**Inner liner separation** - The parting of the inner liner from cord material in the carcass.

**Intended outboard sidewall** - The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

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

**Load rating** - The maximum load that a tire is rated to carry for a given inflation pressure.

**Maximum load rating** - The load rating for a tire at the maximum permissible inflation pressure for that tire.

**Maximum permissible inflation pressure** - The maximum cold inflation pressure to which a tire may be inflated.

**Maximum loaded vehicle weight** - The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

**Measuring rim** - The rim on which a tire is fitted for physical dimension requirements.

**Non-pneumatic rim** - A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separately, 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** - This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

**Occupant distribution** - The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

**Open splice** - Any parting at any junction of tread, sidewall, or inner liner that extends to cord material.

**Outer diameter** - The overall diameter of an inflated new tire.

**Overall width** - The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

**Pin Weight** - The vertical trailer load supported by the king pin of a fifth wheel hitch.

**Ply** - A layer of rubber-coated parallel cords.

**Ply separation** - A parting of rubber compound between adjacent plies.

**Pneumatic tire** - A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

**Production options weight** - The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) 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.

**Radial ply tire** - A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

**Recommended inflation pressure** - This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

**Reinforced tire** - A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

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

**Rim diameter** - This means the nominal diameter of the bead seat.

**Rim size designation** - This means the rim diameter and width.

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

**Rim width** - This means the nominal distance between rim flanges.

**Section width**- The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

**Sidewall** - That portion of a tire between the tread and bead.

**Sidewall separation** - The parting of the rubber compound from the cord material in the sidewall.

**Test rim** - The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

**Tread** - That portion of a tire that comes into contact with the road.

**Tread rib** - A tread section running circumferentially around a tire.

**Tread separation** - Pulling away of the tread from the tire carcass.

**Tread wear indicators (TWI)** - The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

**Vehicle capacity weight** - The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

**Vehicle maximum load on the tire** - The 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** - The 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 of CRF 49 571.110) and dividing by 2.

**Weather side** - The surface area of the rim not covered by the inflated tire.

**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 tire and the vehicle.

**Wheel-holding fixture** - The fixture used to hold the wheel and tire assembly securely during testing.

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## CHANGING A FLAT TIRE

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It is advisable to carry a spare tire, lug wrench, hydraulic or scissor jack and tire gauge. To change a tire, first be certain that you are safely away from passing traffic. If the trailer is still hitched to your tow vehicle, set the emergency brake and turn on the emergency flashers. Set up flares or reflectors to warn approaching motorists of your situation. Chock the wheels opposite to the flat tire. Use a lug wrench to break the lug nuts loose but do not remove them. Position a screw or hydraulic jack directly under the frame as near to the spring hanger as possible and raise the trailer until the tire just clears the ground.



**DO NOT use the axle or suspension components to raise the trailer.**

**DO NOT use the trailer's stabilizer jacks to raise the trailer.**

You may extend the stabilizer jacks after raising the trailer for added stability. Proceed to remove the lugs nuts and flat tire, install your spare tire and reverse the entire procedure. Follow the guidelines on lug nuts in the following section.

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## WHEEL LUG NUTS

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Lug nuts on your wheels can loosen during travel, especially when new or after a tire change or rotation. Each lug nut should be torqued to the specifications and by the procedure as outlined in the axle manufacturer's owner's manual. Remember that over tightening is just as damaging as under tightening. Check lug nut torque prior to each trip. Keep the lug nuts and bolts free of rust.



**NEVER tow the trailer with missing or damaged lug nuts**

The following instruction label has been placed over the wheels of your vehicle to remind you of important required actions:

**NOTICE!  
CHECK WHEEL LUGS**

**On first trip, tighten wheel lugs at start and at 10, 25 and 50 miles. Tighten to manufacturer's specifications**

**Thereafter, check wheel lugs before each trip, after excessive braking and following winter storage**

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## BEARINGS, BRAKES & SUSPENSION: SERVICE

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The remaining components of the trailer's running gear require service and maintenance at varying intervals of time &/or mileage, most of which should be performed by your dealer's service department. Please refer to our supplier's owner's manual and follow their instructions, recommendations and maintenance schedule.

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## FIRE EXTINGUISHER

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For personal safety it is mandatory that you carry a fire extinguisher in your camper at all times. All Chinook RV trailers are equipped with this safety feature. It is located just inside the entrance door. The fire extinguisher should be checked prior to each trip to ensure that the charge is adequate. Should the gauge indicate a low charge, replace the unit immediately. It's too late to worry about it if a fire starts!

NOTE: Fire extinguishers supplied by Chinook RV are a disposable type and cannot be recharged. Consult your dealer for replacement units.

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## ROOF VENTS

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Roof vents should be inspected occasionally to prevent build-up of dirt and debris that may hinder opening. Each vent should be lubricated periodically to keep it in good working order. Automotive vinyl and plastic treatment will prolong the life of the vent cover. Never force open a roof vent.



DO NOT travel with the roof vent(s) open. They are not designed for the pressures exerted by highway speed airflow. Also, dust and dirt may enter the trailer through the vent.

Vent screens should be removed and cleaned to ensure proper ventilation and to avoid premature failure of the fan motor in power vents.



Check the caulking around the edge of roof vents at least twice a year. If the caulking appears dry or cracked, consult your dealer to obtain the proper materials for re-caulking. Should a leak occur, it is important to find the source and prevent additional water from entering the trailer. **Chinook RV is not responsible for consequential damage due to inadequate maintenance of caulks and sealants.**

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## WINDOWS

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We use several types of windows in our trailers. Each type of window has been selected to give the best design, appearance, and ventilation characteristics for the vehicle in which it is installed.

Jalousie type windows are the most common type used in Chinook RV trailers. This style of window provides a positive closure seal to protect against the water and provide maximum ventilation. These windows will require lubrication occasionally at the hinge points, torque bar and operator.

Slider windows are used when a jalousie window will interfere with the operation of another aspect of the trailer (slideout end walls, entry doors, etc.). Debris may accumulate in the lower channel of the window frame. Also there are “weep” holes on the outside lower frame. These holes allow rainwater to drain out of the lower channel. If these holes become clogged with debris, water can fill the channels and overflow into the interior. Occasionally check the holes for obstructions and clean them as necessary.

Egress (escape) windows are design as a secondary exit in the event of an emergency, although they can also be utilized for ventilation. Be aware that the entire glass pane separates completely from the trailer when extended beyond the ventilation position to allow for emergency exit. Review the operation of the egress window with your entire family.

Just like the roof vents, windows should be tightly closed during transit. Road vibration and wind can damage the hinges and operators. During long trips, you should check the windows periodically to be sure they have not vibrated open. Particular attention should be paid to the egress windows. Be certain that the locking mechanism is secured and that nothing will interfere or come in contact with the lock during transit.



**If the egress window is not latched properly, it can separate completely from the trailer and possibly cause an accident or physical damage to your or another’s vehicle.**



All windows may bind if the trailer is not level. If they bind, check for obstructions and check your set-up. A dry silicone spray on hinges and operators will keep the windows operating smoothly and prolong the life of their hardware components. Automotive vinyl or rubber treatment applied to the windows weather seal and rubber glazing is also beneficial.

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## FLOORS

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While high quality materials are used in the manufacturing of your floor, changes may occur because of condensation, thermal expansion and settling of the wood after blocking of the trailer at the campsite. These variations may include an increase in “squeaking” or flexing and they do not compromise the floor structure. Seasonal changes may also result in a certain amount of expansion and contraction of the wood. Keeping

humidity down inside the unit and checking the level of your trailer after blocking can minimize floor flex; however, a certain amount is to be expected.

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## **EXTERIOR MAINTENANCE**

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Your trailer will give you many years of service with proper maintenance and care. Care in setting up your new trailer and periodic maintenance of the interior and exterior will help ensure trouble-free use throughout the trailer season. Keeping your trailer in peak condition requires a minimum of effort if done consistently. Most maintenance involves merely inspection, cleaning and/or lubrication. If your trailer is neglected, serious problems may go unnoticed until they become irreparable or dangerous.

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## **ALUMINUM WALLS**

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Exterior paint finish life can be extended with good maintenance

Routine cleaning should be performed with warm water and a mild detergent. Normal automotive cleaning products are recommended. Avoid cleaners containing bleach as they may discolor the exterior graphics. Use of high-pressure sprayers is also discouraged. The force of the spray can actually strip the decals and force water through the seams of the aluminum siding.

A spray wax, or wash and wax combination should be used due to the texture of the aluminum. This not only preserves the paint and prevents oxidation, but also allows for easier removal of dirt and road tars. Use of touch up paint for small areas keeps the recreational vehicle in like new condition.

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## **FIBERGLASS WALLS**

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Fiberglass exterior surfaces are produced using a manufactured fiberglass reinforced plastic panel with a smooth gel coat surface. This material is designed for sidewalls and front or rear walls. Recommended cleaning products are Protect-All spray cleaner, polish, and wax treatment for all types of vehicles surfaces, RV-455 (an easy to use black streak remover), Simple Green (a non-toxic biodegradable cleaner) or equivalents.

Please review the “Care and Maintenance Guidelines’ for fiberglass found in your packet of owner’s manuals.

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## **RUBBER ROOF**

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For normal cleaning and maintenance of your rubber roof, standard household detergents or cleansers may be used. Use non-abrasive cleaners and be sure to use plenty of water and keep the sidewalls wet to eliminate possible streaking. A light scrub brush (NOT WIRE) will work better than a sponge to loosen the accumulation of debris and residue that forms on the roof material. This accumulation may be perceived as a deterioration of the rubber roof, but it is not. Simple routine cleaning can reduce or

eliminate the buildup. Do not use gasoline, naphtha, or paint thinners to remove tar. These chemicals could cause the rubber material to soften or blister.

Again, please review the “Care and Maintenance” section of the roofing system leaflet found in your packet of owner’s manuals.

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## **UNDERBELLY**

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The underbelly typically does not require maintenance; however it should be inspected periodically for cuts or tears. This type of damage should be patched to prevent insect and vermin infestation.

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## **GENERAL EXTERIOR**

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Inspect the window, door and molding screws for tightness at least twice a year. Temperature and humidity conditions, road vibration and sealant “oozing” will cause screws to loosen. Gently tighten the screws, making sure the screw is snug, without bending or buckling the attached component or molding.

Routinely check the caulking on the corner moldings, roof seams, vents, windows, doors, etc. Extreme temperatures, ultraviolet light and chemicals will affect the various sealants used and create the possibility of water leaks. Caulking should be inspected periodically and, if needed, the unit should be re-caulked before damage can occur. Remove the old sealant and clean the surface before applying new sealant. Your dealer can recommend the appropriate sealants.

Should a leak occur it is important to find the source and prevent additional water from entering the trailer. Inspection and repair of the affected area should be performed promptly to prevent deterioration inside the roof, walls and floor. Chinook RV is not responsible for consequential structural or cosmetic damage due to failure to maintain sealant integrity.

Graphite powder on the entry and compartment door locks will keep them working freely.

## INTERIOR APPEARANCE CARE

General household, automotive and specialized RV cleaners and polishes are adequate for cleaning and maintaining the interior surfaces of your trailer. Follow the label instructions, warnings and recommendations for each product and test the product on an inconspicuous area if there is any concern of discoloration or deterioration.



**Do not use *citrus cleaners* on vinyl and plastic surfaces as they have been shown to cause discoloration and/or yellowing. This includes fixtures such as tubs, toilets, sinks, and faucets as well as other components like screen door panels, light fixtures and receptacles. This type of damage is excluded from warranty coverage.**



**Many cleaners may be toxic or flammable, and their improper use may cause damage, personal injury or death. No chemical agent should be utilized for any purpose for which it is not intended. Be sure the vehicle is well ventilated while using any cleaning agents. Turn off all appliances when using flammable chemicals. Follow the cleaner manufacturers' recommendations in using such products.**

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## GENERAL FABRIC AND UPHOLSTERY CARE

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Dust and loose dirt that accumulates should be removed frequently with a vacuum cleaner, whisk broom or soft brush. Normal soiling, spots or stains can be cleaned with the appropriate cleaning solutions. Never use gasoline, nail polish remover or acetone, lacquer thinners, bleaches, etc.

Do not machine wash any interior fabrics. Due to possible shrinkage, cushion covers should not be removed for cleaning. Check the upholstery tag for warranty information and cleaning instructions. Some basic steps should be remembered before the cleaning is attempted:

- Test cleaners on an inconspicuous location
- Remove stains as quickly as possible before they "set"
- Use a clean cloth or sponge and change to a clean area frequently.  
A soft brush may be used if stains persist
- Use solvent type cleaners in a well-ventilated area, and do not saturate the stained area
- If a ring or discoloration should form after spot cleaning, the entire area should be cleaned immediately
- Follow instructions on the label of the cleaner
- Allow the surface to thoroughly dry before using

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## **DRAPERY CARE**

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The draperies used in your trailer are to be professionally dry cleaned only.

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## **BEDSPREADS**

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The bedspread used in your trailer is to be professionally dry cleaned only.

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## **PANELING – WALLS, CEILING & CABINETS**

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The walls, ceiling and cabinet surfaces are vinyl clad lauan paneling. Use a damp sponge or soft cloth with mild detergent and warm water to clean these surfaces. Avoid saturating amounts of water to prevent wicking at the edges and seams of the paneling. Use care on the textured white ceiling to prevent uneven cleaning.

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## **WINDOWS & MIRRORS**

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The glass surfaces should be cleaned on a periodic basis for continued good visibility. Use of a household glass-cleaning agent containing ammonia will remove residue from tobacco smoke, dust and cooking.

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## **COUNTERTOPS**

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High pressure, laminated counter tops may be cleaned with detergent and water or liquid cleaners. Do not use abrasive cleansers and pads. Do not use the counter as a cutting surface. Do not place hot cookware directly on the counter's surface. Do not allow liquids to stand on the surface near the counter's edges or cutouts (range & sink). The untreated edges can absorb excess moisture that may cause swelling and premature deterioration.

## SETUP AND OPERATION

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### LEVELING THE TRAILER

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When selecting your campsite, find a site that is as level and firm as possible. It is very important that the trailer be properly leveled before extending the slide-out room. Level the trailer from side to side prior to unhitching by maneuvering the tires onto wood plank(s). After appropriate blocking, chock the wheels and lower the front tongue jack (TT) or landing gear (FW). It may be necessary to place blocking under the jack feet if the site is extremely un-level or the ground surface is soft. Proceed to unhitch the trailer from your tow vehicle. Next, level the trailer, fore and aft, using the tongue jack or landing gear. The landing gear inner legs may be dropped to different positions to accommodate uneven surfaces. Use of a carpenter's level will help with the accuracy of your setup. At this point, extend the corner stabilizer jacks (if equipped) enough to provide support to prevent rocking and bounce. Once again utilize blocking under the stabilizers if necessary. It may be necessary to adjust the jacks and blocking after a period of time due to settling.



**DO NOT attempt to level or raise the camper with the stabilizer jacks. They are not designed for lifting or supporting the trailer and doing so will result in an unsafe situation. The weight of the trailer should always remain on the tires *and* the front jack(s) or hitch. Failure to observe this warning may also result in structural deformation causing misalignment of doors, windows, cabinets and slide-out.**

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### CONDENSATION

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Condensation of warm water vapor on cooler interior surfaces may temporarily occur in your trailer. Moisture from outside air infiltration, showering, cooking and your own body contribute to interior moisture.

When camping in cool weather you will notice moisture in the trailer on the windows first. A combination of proper ventilation using ceiling vent fans and the range vent along with normal balanced heating and air conditioning will help control excessive condensation.

While camping in cooler weather, condensation will likely accumulate on the windows, vent covers and other surfaces. To help alleviate this condition, open a roof vent slightly and utilize power vents if equipped. Periodic operation of the air conditioner's fan to circulate the interior cabin air is also effective in reducing condensation. Increased comfort and the elimination of condensation will offset the increased demand on the furnace due to heat loss.

While using the air conditioner during warmer temperatures, be sure to keep windows and doors tightly closed to prevent humid outside air from entering and condensing on the cool interior surfaces. The air conditioner will remove excess interior moisture and

discharge the condensation on the roof of the trailer. It is normal for condensation to temporarily accumulate around the ceiling registers during the initial cooling period

During extended camping trips, periodically open cabinets and wardrobes to allow fresh air to circulate into these areas. Condensation is more likely to accumulate in the areas where heating and air conditioning cannot circulate.

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## SLIDEOUT OPERATION

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Many Chinook RV trailers are equipped with an expandable section referred to as a slide-out room which provides a much more spacious interior.

Before extending your trailer's slide-out room check the following:

- The trailer has been leveled in all directions
- The stabilizer jacks have been extended
- Adequate clearance is available (trees, posts, etc.)
- An auxiliary battery with a full charge is connected (do not operate the slide-out from the converter voltage only)
- No obstructions are present inside the trailer (check for open cabinet doors, furniture, etc.)

Press the “OUT” slide-out switch and hold it until the room is fully extended. Release the switch when the slide-out mechanism clutch begins to chatter. Check that the interior flange is nearly flush to within approximately ½” all the way around the opening.

If while extending, you observe the room twisting or pitching in the opening (other than the last few inches of travel), stop and look for obstructions or loose mechanism parts. Retract the room a few inches and look under the slide-out floor for objects that may be wedged there. Only after you have verified a clear path for the room to extend should you continue to extend the room.

Slide-out rooms do not require additional support. If you decide to add aftermarket support jacks for the slide-out, be sure not to lift the room as you may break the weather seal between the interior flange and the sidewall. Frequent inspection and adjustment is important when using slide-out support jacks. Also be sure to position the jacks so as not to damage the underside of the room.

The slide-out room is not designed to be used while partially extended. The floor is not supported nor is the weather seal effective unless the room is fully extended. Structural damage may occur from walking or standing on the slide-out floor when the room is retracted or partially extended.

Before retracting the slide-room make certain that there is nothing on the slide-out roof such as tree branches, pine cones. These objects can lodge in the wall opening and damage the rubber roof membrane.

The slide-out room may be extended and retracted manually in the event of a component failure or a discharged battery. Refer to the accompanying supplier instruction manual for this procedure.

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## SPORT UTILITY TRAILERS

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### Ramp Operation

Before lowering the ramp, be certain there is adequate clearance for the ramp and that the ground surface will fully support the width of the ramp. Level the trailer and extend the stabilizer jacks as explained in the previous sections. Preferably you should have assistance when lowering or raising the ramp/door. Standing to the side of the ramp, release the travel lock handles and swing them outward away from the ramp. Grasp the assist handles firmly and pull the ramp out and down. Do not allow the ramp to “drop” to the ground. At this point make certain that the outer edge of the ramp is fully supported by the ground surface. The assist springs have a maximum extension length and the ramp, springs or hardware may be damaged if the ramp frame is overextended or not firmly supported along the outer lip. If necessary, place additional blocking on the ground surface the full width of the ramp before placing any load on the ramp.

Never attempt to move the trailer with the ramp down. Clean any debris such as mud, snow and ice from the ramp and the ramp seals before closing the ramp.

The maximum rolling load for the ramp/door on the sport utility trailer is 1000 pounds. Do not “park” equipment on the ramp door for extended periods.



**Periodically inspect the ramp hardware, springs, latches, hinges and brackets for excessive wear, rust or misalignment. Lubricate all moving parts with oil or grease. Inspect the rubber weather stripping and replace it as necessary.**

### Cargo Area

The anchoring of any equipment within the cargo area is wholly the responsibility of the owner. Damage to the trailer or to the equipment due to shifting during towing, stopping and accelerating may occur if you do not adequately secure your load. Minimal capacity tie-down rings have been provided with the trailer; however additional hardware will likely be necessary for your particular equipment. Consult your trailer dealer or equipment dealer for the availability of aftermarket accessories and for proper installation for the safety and protection of your equipment.



The following warning label is located near the entry or compartment area door regarding hauling and storage of motorized vehicles in the cargo area. Read, understand and adhere to each of the items listed.

**! DANGER**

**Any motorized vehicle or any motorized equipment powered with flammable liquid can cause fire, explosion, or asphyxiation if stored or transported within the recreational vehicle. To reduce the risk of fire, explosion, or asphyxiation:**

- 1. Passengers shall not ride in the vehicle storage area while vehicles are present.**
- 2. Occupants shall not sleep in the vehicle storage area while vehicles are present.**
- 3. Doors and windows in walls of separation (if installed) shall be closed while vehicles are present.**
- 4. Fuel shall be run out of engines of stored vehicles after shutting off fuel at the tank.**
- 5. Motor fuel shall not be stored or transported inside this vehicle.**
- 6. The vehicle storage area shall be ventilated.**
- 7. Propane appliances, pilot lights, or electrical shall not be operated when motorized vehicles or motorized equipment are inside vehicle.**

**FAILURE TO COMPLY COULD RESULT IN AN INCREASED RISK OF FIRE, EXPLOSION, ASPHYXIATION, DEATH OR SERIOUS INJURY.**

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## **PLUMBING SYSTEM**

### **POTABLE FRESH WATER SUPPLY**

All models are equipped with a dual water system – onboard demand water and city water. Both systems provide water pressure for all of the trailer’s water fixtures.

The demand water system utilizes an onboard fresh water supply tank with a gravity fill port, a low voltage demand water pump and a remote switch. The water tank is filled from the exterior at the gravity fill port with a hose or from water jugs if necessary. If available, you can fill the tank with softened water from a household washing machine connection. This will help prevent the buildup of hard water minerals in the tank. While initially filling the tank, allow it to flush for a few minutes by removing the drain plug, then reinstall the plug and continue filling the tank. You can watch the tank monitor inside the coach to tell when the tank is full or simply allow the tank to back up and overflow the fill.

When connected to your 12-volt power source and the remote switch activated, the pump will draw water from the supply tank and pressurize the water system to a working pressure of approximately 40 psi. Once the working pressure is attained the pump will automatically turn off. When a faucet is opened, the line pressure will drop and the pump will cycle on and continue to run until the faucet is closed. An inlet filter protects the water pump. This filter must be cleaned periodically by opening the filter housing, and removing and cleaning the internal screen.

The city water system allows for direct connection to a public water supply via an FDA approved water hose. Pressure from the external water source will usually prevent the demand water pump from running. Some external water supplies have unusually high water pressure. Although the plumbing in Chinook RV trailers is capable of handling pressures of up to 100 psi, the resulting water hammer and forceful spray can be annoying. Aftermarket pressure regulators are available to reduce the hydrant pressure.

### **WATER HEATER**

The water heater in your trailer is one of several models. Gas pilot, Gas direct spark ignition, or either of these combined with 110-volt operation. Refer to the water heater instructions for proper operation and maintenance. On trailers with a combination gas pilot and 110-volt water heater, Chinook RV installs a secondary 110v operation wall switch in the galley area for your convenience.

Both water systems automatically fill the water heater tank. During the initial pressurization, air inside the water heater must be purged through a faucet. This can take several minutes. After a steady flow of water appears from the faucet’s hot side, the water heater tank is full.

Your water heater may be equipped with a bypass valve system to allow for economical winterization. Access to the bypass is made at an interior cabinet door, an exterior luggage compartment, or it may require removal of an interior access panel. The bypass system consists of three valves - a cold water inlet shut off, a hot water outlet shut

off, and a bypass shut off. Refer to the following section on winterization for instructions on the use of the bypass.

Refer to your water heater owner's manual for operation, maintenance and warranty information.

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## WINTERIZATION

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**WARNING! NEVER use alcohol, automotive antifreeze or swimming pool antifreeze in any portion of your vehicle's potable water system.**

### Trailers without Water Heater Bypass Valves

The water heater holds approximately 6 gallons of water. The pressure lines and traps hold another 1 to 2 gallons. This means that it may require at least 8 gallons of antifreeze to displace the water in the system. However, the pump does not completely draw all the fluid from the fresh water tank so another 2 to 3 gallons are required for the residual amount which will remain in the tank. Therefore, it may require 10 to 12 gallons of antifreeze to protect the entire water system from freeze damage.

To winterize the system, drain the fresh water tank by removing the plug on the bottom of the tank and drain the water heater tank by removing the plug behind the access cover on the outside. It is also necessary to open the pressure relief valve on the water heater to prevent a vacuum from stopping the flow. After the tanks have drained completely, reinstall the plugs and close the relief valve. Now, pour the required amount of antifreeze into the fresh water tank through the gravity water fill. Close all hot and cold faucets and turn on the water pump. Open the hot side of the galley faucet and leave it open until antifreeze flows steadily through the spout. This step will take several minutes while the pump fills the water heater tank. Once antifreeze is present at the spout, close the hot side of the faucet and open the cold side until antifreeze flows steadily from the spout. Allow the flow to continue until the sink trap is filled with approximately 2 cups of antifreeze. Repeat this procedure at each faucet on the trailer. Do not forget the exterior faucet if so equipped. Finally, hold the toilet flush handle open until antifreeze flows steadily into the bowl then turn off the water pump. At this point, your RV's potable plumbing system is protected to the temperature indicated on the antifreeze label.

### Trailers with Water Heater Bypass Valves

The procedure is the same as outlined above except that less antifreeze is required since the water heater will not be filled. Therefore, it will require approximately 5 gallons of antifreeze to protect the entire water system from freeze damage.

To winterize the system, drain the fresh water tank by removing the plug on the bottom of the tank and drain the water heater tank by removing the plug behind the

access cover on the outside. It is also necessary to open the pressure relief valve on the water heater to prevent a vacuum from stopping the flow. After the tanks have drained completely, reinstall the plugs and close the relief valve. It is now necessary to reposition the bypass valves. This is done by closing the hot (upper) and cold (lower) valves and opening the bypass (center) valve. Now, pour the required amount of antifreeze into the fresh water tank through the gravity water fill. Close all hot and cold faucets and turn on the water pump. Open the hot side of the galley faucet and leave it open until antifreeze flows steadily through the spout. Once antifreeze is present at the spout, close the hot side of the faucet and open the cold side until antifreeze flows steadily from the spout. Continue the flow to allow the sink trap to fill with approximately 2 cups of antifreeze. Repeat this procedure at each faucet on the trailer. Do not forget the exterior faucet if so equipped. Hold the toilet flush handle open until antifreeze flows steadily into the bowl then turn off the water pump. At this point, your RV's potable plumbing system is protected to the temperature indicated on the antifreeze label. You can now return the water heater bypass valves to their normal operation position.

### **Bypassing the Fresh Water Tank**

To save even more antifreeze, the fresh water tank can also be bypassed. This is done by locating and disconnecting the hose on the inlet port of the water pump, connecting a secondary 4' hose in its place, then inserting the hose directly into the antifreeze bottle. The pump's inlet port can be identified as having the inline filter. The rest of the procedure is the same as outlined above. You may need to introduce a second gallon of antifreeze if the first gallon is depleted during the procedure.

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## **SANITIZING THE POTABLE WATER SYSTEMS**

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The following procedure is recommended to assure complete sanitation of your potable water system: It applies equally to a new system, one that has not been used for a period of time, or one that may have become contaminated.

1. Mix a solution of one gallon of water and ¼ cup of chlorine bleach (5% sodium hypochlorite).
2. Make sure tank is empty. Pour solution into tank. Use one gallon of solution for each 15 gallons of tank capacity. Use care not to spill the solution on the side of the trailer.
3. Fill tank with fresh water. Open all faucets and drain valves until all air has been released and entire system is filled. Close faucets and valves.
4. Allow to stand for three hours.
5. Drain, and flush with fresh water. Tank can be drained by removing the drain plug.
6. To remove excess chlorine taste or odor which might remain, mix solution of one quart of vinegar to five gallons of water. Pour this solution into tank and allow to agitate in tank for several days (rock or move vehicle back and forth several times a day).

7. Drain tank and again flush with potable fresh water. Water should not be left in water tank after your trip. Fresh water before each trip will ensure the highest quality drinking water for your family.

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## SEWAGE AND WASTE SYSTEMS

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The waste system in your trailer consists of the sink, tub and toilet fixtures, holding tank(s) and termination valve(s). Proper care and maintenance of your trailer's waste system will assure many years of trouble-free service.

Vehicles equipped with this total waste system make you independent of the other restroom facilities during your travels. Depending on the size of your holding tanks, the size of water tanks, and the amount of water used, you can stay away from service facilities for extended periods of time. Also, please remember if you leave the cap on your drain, water may back up into the lowest part of the drain system.

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### BLACK WASTE TANK

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The black waste tank collects and contains human waste from the toilet. No other waste water is directed into the black tank. The black tank requires an initial charge of water and chemicals prior to use. This prevents solid matter from accumulating and clogging the inlet and/or outlet of the tank. Introduce enough water to cover the bottom of the tank about ½" deep (typically about 3 gallons) either by flushing the toilet or pouring from a bucket into the toilet bowl with the flush lever depressed. It is also recommend using a waste tank chemical to deodorize and dissolve the solid waste material and tissue paper in the tank. There are several aftermarket products available from your dealer.

Also available from your dealer is toilet tissue paper specifically for black water waste systems. It is formulated to more readily break down in a shorter period of time. You may also use household tissue that is safe for septic systems, although it will typically retain its solid form longer and is more prone to clogging or restriction.

While using the black waste system, DO NOT leave the waste valve open, even if you are connected to a septic system. You must allow the tank to fill up as much as possible (at least ½) so there is sufficient water volume to wash out the solid matter when dumping.



**DO NOT use your potable water hose to put water in the black tank by inserting it into the toilet bowl.**

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### GRAY WASTE TANK

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The gray waste tank collects and contains drainage from the galley and lavatory sinks and the tub/shower. This is generally all liquid waste with only a small amount of solid matter from washing dishes. Chemical treatment is usually not required to maintain the gray water tank. Although continuous draining into a permanent public septic waste

system is an acceptable practice, it is again advisable to allow the tank to fill and receive the benefit of the washout action.

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## **SEWAGE DISPOSAL AND TANK CLEANING**

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When it's time to drain your waste tanks, just take your trailer to the nearest dump station. You will need to obtain a sewer hose, adapter and hose clamp available from your dealer. After you've secured the sewer hose adapter to the outlet connection, insert the sewer hose into the dump station port. Next, pull the black water tank slide valve. This is the larger valve. After the tank is drained, close the valve and pour in 3 to 5 gallons of rinse water through the toilet bowl with the flush lever depressed. Many dump stations have a rinse hose nearby for flushing the tanks and rinsing out the hose. Go outside and again fully open the black tank valve. After the rinse water has drained from the black tank, close the valve and then open the gray water slide valve. The gray waste water will serve to wash out the black waste from your sewer hose while it drains. It is advisable to also flush the gray holding tank with rinse water also by pouring water down the tub drain. Make sure both gate valves are securely closed. Carefully disconnect the hose adapter from the trailer and "snake" any remaining water toward the sewer port to avoid spillage on the ground. Store the sewer hose in the bumper or other receptacle provided for the purpose. Finally, replace the cap on the waste tank collector outlet.



**NOTICE: UNDER NO CONDITION SHOULD THE CONTENTS OF THE TANK EVER BE EMPTIED BESIDE THE ROADWAY, IN A RIVER OR STREAM, OR DIRECTLY UPON THE GROUND**

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## **THINGS NOT TO PUT INTO THE TOILET AND TANK**

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- Facial and other similar tissues. Unlike toilet paper, nearly all facial tissues are impregnated and treated to give them strength. This quality makes it almost impossible to dissolve them in the tank. Most toilet paper dissolves after a period of time, especially if agitated by traveling. However, facial and similar tissues do not, so never put them in the tank
- Do not use detergents and bleaches. This is fairly common practice and always does more harm than good because detergents remove lubrication oils and greases. It is better to use a trailer sewage deodorizer that you can obtain from your dealer
- Do not use antifreeze, ammonias, alcohols, or acetones in your tanks. Such liquids may damage your tank, valve parts, tank fittings, or drain hose. They offer no advantage and may cause multiple problems
- Drain your tank when storing the coach to prevent freezing

## LP GAS SYSTEM

### BASIC INFORMATION

Your trailer is equipped with a liquefied petroleum gas (LPG) system. LPG is a true gas compressed into liquid form for easy transportation and storage. It is also known as propane, butane, or bottled gas. On-board storage cylinders provide gas for cooking, heating, hot water and refrigeration.



**DO NOT connect your trailer to natural gas as your appliances are designed to operate on LPG only.**

Please refer to the accompanying “What You Need to Know About LP Gas” pamphlet for additional information.

When utilizing LPG appliances at high altitudes, such as mountain campgrounds, the gas burns at a lower temperature. This causes a “cooler” flame and cooking times will be proportionately increased, as will gas consumption of the furnace, water heater, etc.

If you are preparing recipes in which cooking time and/or temperatures are critical, you should consult a good cookbook or seek local advice regarding the proper adjustments for the altitude at which you are camped.

### FILLING OF LPG CONTAINERS

The LP cylinders used by Chinook RV utilize an overfill protection device incorporated into the service valve. This device prevents filling the cylinder beyond 80 percent of its liquid volume. Overfilling the LP-Gas container(s) can result in uncontrolled gas flow causing fire or explosion. A properly filled container will hold approximately 80 percent of its water volume as liquefied petroleum gas. The remaining 20 percent of the tank’s volume contains LP vapor under high pressure. The cylinders as shipped from the factory contain pressurized air, not LP gas. The initial fill will require the air to be purged from the cylinder. Your dealer or LP filling station should perform this operation prior to filling the cylinders. From that point on, purging is not required.



When there is a demand for gas from one of the appliances, the high-pressure vapor is drawn from one cylinder, through the pressure regulator and reduced to the operating pressure of the appliance. The regulator allows the gas to be drawn from only one of the cylinders at a time. When the supply of gas from the tank is depleted, internally the

regulator automatically switches to second cylinder and the indicator at the top of the regulator turns red. At that time you may remove the empty cylinder for refilling by manually turning the changeover lever to the opposite position and disconnecting the flexible pigtail.



**Excluding fifth wheel trailers with separate LP cylinder compartments, DO NOT move or tow the trailer with only one cylinder mounted. Both cylinders must be installed to be properly secured.**

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## LPG REGULATOR INSTALLATION

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

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## LIQUIFIED PETROLEUM GAS (LPG) IS EXPLOSIVE

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Propane in the gaseous state is heavier than air. If allowed to escape into the atmosphere it will flow to the lowest point in your trailer. Propane in this natural state is odorless and tasteless. An odorant is introduced into the gas so that, in the event of a leak, you should detect a distinct odor. Utmost care should be exercised to prevent leaks from the LP system.



**If you smell gas, immediately open all windows, vents, outside doors, and cabinet doors and exit the trailer. Do not turn any electrical switches on or off. Close all LP tank service valves. Let the trailer stand unoccupied for 2 hours. Opening the windows only will not eliminate the danger of an explosion. Do not open the LP tank service valves until the leak has been repaired and the system leak-tested**

## LPG WARNINGS

The following labels have been placed in the vehicle near the galley range area and the LP tank area:

**⚠ DANGER**

**IF YOU SMELL PROPANE**

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

**FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY. LD-101**

**⚠ DANGER**

**ALL PILOT LIGHTS, APPLIANCES AND THEIR IGNITORS (SEE OPERATING INSTRUCTIONS) SHALL BE TURNED OFF BEFORE REFUELING OF MOTOR FUEL TANKS AND/OR PROPANE CONTAINERS. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.**

**⚠ WARNING**

**DO NOT FILL PROPANE CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. FAILURE TO COMPLY COULD RESULT IN A FIRE OR PERSONAL INJURY.**

**⚠ CAUTION**

**THIS PROPANE PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM. Securely cap inlet when not connected for use. After turning on propane, except after normal cylinder replacement, test propane piping and connections to appliances for leakage with soapy water or bubble solution. Do not use products that contain ammonia or chlorine. LD-101**

## CHECK FOR GAS LEAKS



ALL BOTTLE AND LINE CONNECTIONS SHOULD BE CHECKED FOR LEAKAGE WITH A SOAPY WATER BUBBLE SOLUTION or APPROVED SOLUTION. DO NOT USE PRODUCTS THAT CONTAIN AMMONIA OR CHLORINE.



**NEVER USE AN OPEN FLAME WHEN TESTING FOR LEAKS IN THE GAS SYSTEM.**

Solid manifold piping runs from the LPG regulator hose connection to the appliance distribution lines. No connections are made within the walls or floor of the trailer. Each appliance incorporates two brass flare nut connections – one at the appliance and one at the manifold pipe. Each of these connections as well as the LPG regulator hose connections should be checked for leaks at least annually and more frequently if the trailer is towed extensively or under adverse highway conditions. The LPG tank valve connection should be checked every time the tanks are removed and reinstalled.

If you have any reservations about testing the LP system yourself, have an RV dealer or LPG dealer perform the leak test.

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## LPG CYLINDER STORAGE

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**WARNING:** LP-Gas containers shall never be placed or stored inside the vehicle. LP-Gas containers are equipped with safety devices that relieve excess pressure by discharging gas to the atmosphere.

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## RANGE VENTILATION

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**WARNING:** IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.

Cooking appliances require a supply of fresh air for safe operation.

Before using your range or oven:

1. Open overhead vent or turn on the range exhaust fan.
2. Open the galley or nearest window.

Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle. Proper ventilation when using the cooking appliance(s) will avoid dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating.

The following warning label has been affixed in the general area of the range:



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## PORTABLE FUEL-BURNING EQUIPMENT

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

# ELECTRICAL SYSTEMS

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## GENERAL

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Your trailer is equipped with a dual voltage electrical system designed to provide power to the appliances and lighting from either a 120-volt outside source or a 12-volt battery installed on your trailer. In addition, most models are equipped to charge the onboard battery from the 120-volt source or the tow vehicle.

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## CHANGES, MODIFICATIONS, AND ADDITIONS

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Your electrical system of 120 volts AC and 12 volts DC has been designed and installed in accordance with the safety requirements of the National Electrical Code. Any changes, additions, and/or modifications that you might make after delivery may develop a hazardous condition. Be sure to consult your local authorized dealer for advice concerning changes or additions. Only qualified electrical technicians should attempt to make any changes or additions to your electrical system, and then, using only approved material and components and employing approved methods of installation.

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## 120-VOLT AC SYSTEM

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The 120-volt AC system operates from an external 120-volt 30-amp power source. The system is designed to provide 120-volt AC to all the electrical convenience outlets, power converter, air conditioner, refrigerator and electric water heater (if equipped).

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## CONNECTING TO THE 120 VAC SOURCE

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Your trailer is equipped with a 120-volt 30-ampere power supply cord on the end of which is a heavy-duty 3-prong 120-volt 30-ampere plug cap. The power cord supplies electrical current to the distribution panel in the power converter. The round grounding prong is a means of connecting the exposed metal parts of the recreational vehicle to earth ground so there can be no voltage differential between them to produce an electrical shock. The National Electric Code is very explicit in its requirements to assure the connection of all exposed non-current-carrying metal parts that may become energized to the grounding conductor – which is thence connected to earth ground in accordance with the National Electric Code. According to these standards:



- The metal skin of a trailer must be bonded to the metal frame.
- The frame, metal water and gas pipes, and all other exposed metal parts must be connected to the grounding buss in the distribution panel board.

- The grounding bus is then connected through the green wire in the power supply cord to the THIRD PIN in the park receptacle is then connected to earth ground.

The insulation on the power cord should be inspected frequently for cracks, cuts, or chafing. Make sure the plug ends are corrosion-free and not bent.



**Connecting the power cord to 240-volt or to an ungrounded (2-prong) power source can result in personal injury or death from electrocution.**

The 30-amp service plug on your trailer is capable of handling up to 30 amperes of current when connected to a 120-volt power supply. Some recreational vehicle parks may only provide standard 120-volt 15-ampere connections similar to typical interior residential receptacles. You can connect to the 15-amp service utilizing an adapter (not provided) but you must limit your electrical usage to only lighting and minimal accessories not exceeding a total of draw of 15 amperes. Do not use 15-amp service for air conditioning, water heater usage or electric appliances.



**Overloading the service connection can lead to overheating of the electrical service cord, plug and/or components which could result in personal injury or death from electrocution or fire.**

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## 110-VOLT DISTRIBUTION PANEL

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The 110-volt distribution panel is incorporated into the power converter. The distribution panel consists of one 30-amp main circuit breaker and additional branch circuit breakers as required for your particular model. When a circuit is overloaded or shorted, the breaker lever will trip to center. If this occurs, disconnect or turn off any appliances or accessories that you have connected to the circuit. Reset the breaker by switching the breaker lever to the off position and then back to the on position. If the breaker continues to trip and you have made certain that the circuit is not overloaded, a qualified electrical repair person should be consulted.

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## 12-VOLT DC SYSTEM

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The 12-volt DC system can draw power from one of three sources:

1. The built-in power converter
2. The auxiliary battery(s) on the trailer
3. The vehicle engine 12-volt system through the 7-way connector

The 12-volt DC system is designed to power the following equipment in the trailer:

Interior Lights	Range Hood Exhaust and Light
Exterior Patio Lights	Refrigerator Controls
Furnace Controls & Blower	Antenna Amplifier & Accessory Jack
Water Pump & Monitors	AM/FM Radio & CD Player (if equipped)
Power Roof Vents	

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## POWER CONVERTER

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The heavy-duty power converter installed in your trailer converts 120-volt AC to 12-volt DC. Refer to the accompanying converter manufacturer's operator's manual for specific features, instructions and maintenance. Some suggestions for maintenance of your power converters:

- Free circulation of air around the power converter is critical. Do not allow belongings to obstruct the ventilation.
- Keep the power converter dry. Moisture can corrode or short out electrical equipment.
- Keep the power converter as clean as possible. Compressed air is recommended to remove dust accumulation on the interior of the converter.
- Be careful not to overload your circuits.

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## 12-VOLT DISTRIBUTION PANEL

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The power converter also houses the 12-volt distribution panel. This is where all 12-volt power sources connect to the trailer's 12-volt equipment through the fuse panel. The 12-volt circuits are protected by single use ATC automotive type fuses. If a circuit is overloaded or shorted the fuse will "blow". Replace the fuse with one of the same amperage rating. If the fuse blows again, have the problem inspected by your dealer.



**Do not by pass the 12-volt fuses or replace them with higher amperage fuses. Unsafe conditions could develop resulting in personal injury, fire or death.**

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## AUXILIARY BATTERY

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When camping without a 110-volt power source, your source of electricity will be an optional auxiliary 12-volt deep cycle storage battery. Proper care of your battery is necessary for longer service life. Check the battery routinely for loose and corroded terminals, foreign matter on the top surface and low electrolyte. You can use a hydrometer to check the specific gravity of the battery. For extended trips, you may wish to install a second battery for added electrical power. When installing two batteries, they should be of comparable size and capacity. Connect the batteries in a parallel circuit (positive to positive and negative to negative).

To clean the battery, remove it from the trailer and wash the top with a baking soda and water solution. Keep the top surface of your battery clean. Dirt and electrolyte on the top of the battery can actually close a circuit between the terminals and discharge the battery over a period of time.



**Use caution when handling and checking the battery. Contact with the acid contained in the battery can cause burns or loss of sight. Charging a battery produces explosive gasses so always charge the battery in well ventilated areas away from sparks or flames. Follow the warnings on the battery label.**

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### **TOW VEHICLE AUXILIARY 12 VOLT**

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The 7-way cord which connects to your tow vehicle provides for short term temporary power to the trailer's interior 12-volt circuits. It also allows for charging of the trailer's auxiliary battery while towing. Care must be taken not to deplete the tow vehicle battery voltage to a point where it cannot start the tow vehicle motor. Do not rely on the tow vehicle battery for extended use or heavy power demands.

## MISCELLANEOUS

### OWNER'S CAUTION CHECK LIST

- Periodically check all gas connections to be sure there are no leaks (at least twice a year)
- Close the LP gas tank valves while traveling
- Allow stove to cool before lowering top
- Check tire air pressure
- Check grease in wheel bearings (twice a year or every 3000 miles)
- Check wheel lug bolts/nuts (before and during every trip)
- Check that hitch components and safety chains are properly connected
- Verify that all brakes and break-away switch are functioning properly.
- Be sure to carry proper lug nut wrench
- Check all clearance, tail, brake and turn lights before and during each trip
- Retract the stabilizer jacks fully to the travel position
- Be sure power cord is unplugged and stowed and hatch cover is secured
- Make certain the city water hose is disconnected and stowed
- Verify the 7-way auto cord is fully plugged in and locked in place
- If possible, empty all gray and black water tanks before travel
- Lower the television antenna
- Tightly close and lock all windows, doors, vents and hatches