Coachmen®

RECREATIONAL VEHICLE COMPANY, LLC

TOWABLE OWNER'S MANUAL

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LEGEND

THE FOLLOWING LEGEND IS INTENDED TO EXPLAIN THE VARIOUS ICONS (PICTURES) WHICH ARE USED THROUGHOUT THE MANUAL. THEY ARE USED PRIMARILY FOR YOUR CONVENIENCE AND TO BRING ATTENTION TO THE INFORMATION AT HAND.

WARNING!!!
THIS SYMBOL IS USED TO ALERT THE USER TO PRECAUTIONS THAT INVOLVE YOUR PERSONAL SAFETY AS WELL AS VEHICLE DAMAGE.

CAUTION!!!
THIS SYMBOL INDICATES THAT A FAILURE TO OBSERVE OR FOLLOW THE INSTRUCTIONS COULD RESULT IN DAMAGE TO THE VEHICLE OR EQUIPMENT.

Coachmen Recreational Vehicle Co., LLC.
Towable
Owner's Manual

Coachmen®

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IMPORTANT SAFETY REGULATIONS

LP GAS SYSTEMS AND APPLIANCES

Coachmen Recreational Vehicles, LLC is required to furnish the following consumer information as provided by the National Fire Prevention Association and the American National Standards Institute. The information and warnings found here may also be found in other sections of this Owner's Manual. Please see sections titled "Appliances" for other safety and operating information.

WARNING!!!

THE LIGHTING FLASH WITH ARROWHEAD SYMBOL WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK TO PERSONS.

CAUTION!!!

THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

WARNING!!!

LP gas containers shall not be placed or stored inside the vehicle. LP gas containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.

WARNING!!!

It is not safe to use cooking appliances for comfort heating. Cooking appliances need fresh air for safe operation. Before operation:

1. Open overhead vent or turn on exhaust fan.
2. Open window

A warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle, and proper ventilation when using the cooking appliances(s) will avoid dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.

WARNING!!!

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 asphyxiation.

NOTES:

WARNING!!!
Do not bring or store LP gas containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.

WARNING!!!
Do not bring or store LP gas containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.

WARNING!!! A warning label has been located near the LP gas container. This label reads:

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

Overfilling the LP gas container can result in uncontrolled gas flow which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid LP gas.

The following label has been placed in the vehicle near the range area:

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

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 regulator vent faces downward and the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.

NOTES:

WELCOME TO "RV'ING" WITH COACHMEN

Welcome to Coachmen's® growing family of satisfied RV owners. Hours of relaxation, adventure and enjoyment await you in your new Coachmen RV. Thousands of Coachmen RV owners have been enjoying their purchase for many years.

This Owner's Manual has been prepared to help you and your family enjoy your new Coachmen RV by providing basic instructions for the operation and maintenance of the appliances, accessories and RV systems. Please read it carefully and follow the instructions. Also read and follow the instructions contained in the appliance and accessory manufacturers' instruction booklets provided with your RV.

If you have any questions regarding operation, maintenance, or service, please contact Coachmen RV or your Coachmen dealer so we can assist you. Your complete satisfaction is of the utmost importance to your dealer and to Coachmen.

Operation and maintenance instructions regarding appliances in this manual were obtained from the manufacturer's booklets and are used with the permission of those various manufacturers. Coachmen Recreational Vehicle Company, LLC reserves the right to present edited portions of these materials.

Coachmen offers a wide variety of recreational vehicle models and choices of standard and optional equipment; therefore, certain descriptions in this manual may not apply to your RV. Ask your authorized dealer, or see the current brochure for information on the availability of standard or optional equipment.

Thank you for selecting our product. The entire Coachmen family wishes you many safe and enjoyable journeys in your new Coachmen RV.

Sincerely,

The Coachmen Team

Note:
Coachmen Recreational Vehicle Company, LLC works year round to improve it's product. As a result, all specifications and equipment are subject to change without notice.

All information contained in this Owner's Manual is believed to be accurate at the time of publication, however; during the model year, it may be necessary to make revisions and Coachmen reserves the right to make all such changes without notice.

INTRODUCTION

Congratulations on the purchase of your new Coachmen® recreational vehicle. We sincerely thank you for choosing our product. You'll find many useful tips for the basic operation and maintenance of your Coachmen vehicle's systems and appliances in this Owners Manual.

If you are a first-time RV'er, we want you to learn to operate your vehicle correctly and be able to use components, appliances and any optional equipment in the most efficient manner and with confidence. If you are a veteran RV'er, you know that things change and a quick review of this manual will bring you up to date on what's new.

We would recommend you take a short trip first. The experience you will gain from this will help make your future RV'ing more enjoyable. While there are many accessories available to complement the standard and optional equipment you've chosen for your Travel Trailer or Fifth Wheel, you may wish to use your vehicle several times before you invest in these accessories. What may be a necessity for one RV'er could prove to be of no value to you. Remember, your dealer is always ready to help and advise you.

Note: Due to individual taste and optional floor plans offered, your vehicle may not have all of the components illustrated or described in this manual. Ask your dealer for details concerning the specifics of your travel trailer or fifth wheel recreational vehicle.

TAKING DELIVERY

Your recreational vehicle has been inspected by factory personnel throughout the manufacturing process. Our final factory check by quality control inspectors is not the last one. Your dealer performs additional pre-delivery inspections and systems checks. They will also help you understand the Warranty and complete any necessary forms.

DEALER RESPONSIBILITIES:

1. Orienting the customer to the recreational vehicle, it's systems and components as well as their operation.

2. Insuring the customer receives a complete Owner's Packet with warranty cards and registrations for the recreational vehicle and for separately warranted products, including operation and maintenance instructions.

3. Review Limited Warranty provisions with the customer, stressing the coverage. Assist the customer in completing these forms if needed and request that the customer read all warranty information as soon as possible, explaining any provisions not clearly understood.

4. Instruct the customer how to obtain local or out-of-town service for the recreational vehicle and its separately warranted components.

OWNER RESPONSIBILITIES

As a new recreational vehicle owner, you have the responsibility for regular and proper maintenance. This will help you avoid conditions arising from neglect that are not covered by your Coachmen Recreational Vehicle Limited Warranty. Maintenance services should be performed in accordance with this Owner's Manual and any other applicable manuals. As the owner, it is your responsibility and obligation to return the recreational vehicle to an authorized dealer for repairs and service.

Since the Authorized Dealer from whom you purchased your new recreational vehicle is responsible for its proper servicing before delivery and has an interest in your continued satisifaction, we recommend that inspection, warranty and maintenance services be performed by them.

OBTAINING SERVICE

Give Thought to the Appointment Time...Monday and Friday are the busiest days at most dealerships. Therefore, try to make a mid-week appointment whenever possible.

PREPARE FOR THE APPOINTMENT

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

PREPARE A LIST

Prepare a written list of issues or specific work you require to be done. Advise the Service Manager if work has been performed that is not listed on your Maintenance Log. It is important to keep the log accurate and up to date.

BE REASONABLE WITH YOUR REQUESTS

Appointments are made according to the type of repair scheduled, and the amount of time needed to complete the repair. If you add items after the appointment has been set, discuss the situation with the service manager and list your items in order of priority. Expect to make a second appointment for work not completed or for parts that may need to be ordered.

NO OFFENSE

Insurance requirements forbid the admission of customers to a service repair area.

INSPECT THE WORK PROPERLY

Inspect the completed repairs when you pick up your vehicle and notify the Service Manager of any dissatisfaction.

NOTES:

IMPORTANT DOCUMENTS

Always carry your vehicle registration, insurance policy card(s) and owner warranty registration. If you lend your vehicle, it is best to give the borrower a notarized letter authorizing him to be in possession of the vehicle.

LICENSES

Vehicle licensing laws vary from state-to-state. Check with your state license bureau or the nearest licensing branch office for the requirements of your state.

INSURANCE

Consult your insurance agent about personal liability, property damage, collision and theft of contents insurance for your new recreational vehicle. Always carry your insurance policy and/or card with you when you travel. Obtain current road maps and tourists information for each state you'll visit or drive through.

TOWING/HOOK-UP

Tow Vehicle Requirements

If you plan to tow your RV with an automobile or truck you already own, you might wish to upgrade your vehicle by adding heavier-duty shocks, heavier-ply tires, larger battery, larger alternator, etc. Contact your tow vehicle dealer to find out your vehicle's towing capacity. If you plan to purchase a new tow vehicle will be towing. Some automotive manufacturers publish brochures that discuss towing considerations. Ask your dealer how to obtain a copy of this information. **To operate the electric brakes installed on your RV, a brake control system must be installed in your tow vehicle.**

Engine Size

The engine must have enough horsepower to handle the tow vehicle, passengers, the RV unit and all of its cargo. Most automotive manufacturers offer a trailer towing package that usually includes the following: larger alternator and battery, heavier-ply tires, side view mirrors, heavier electrical wiring and larger engine and transmission cooling systems. Consult your tow vehicle's owner's manual for specific recommendations for your particular vehicle.

Note: Use of heavier suspension components, springs, shocks, axles or heavier-ply tires does <u>not</u> increase the weight ratings printed on the tow vehicle's "certification" plate.

The Gross Axle Weight Rating (GAWR) of each axle is determined by the axle system components with the lowest weight-carrying capacity. To avoid overloading your vehicle, check the Gross Vehicle Weight Rating (GVWR) and the GAWR.

Hitch Selection

Hitch selection is important because it affects the towing and handling characteristics of your RV. Ask your dealer about the proper class and type of hitch for your unit. Sway-control devices are available to reduce sway caused by crosswinds, other vehicles passing you or the RV tires dropping onto the shoulder of the road. You may also want to discuss this option with your dealer.

Be certain your tow vehicle can carry the hitch weight. The required hitch ball diameter is stamped on the trailer coupler. Read the information supplied by the hitch manufacturer to achieve the best possible performance.

HITCH TYPES (STANDARD)

Class	Type	Max. G.T.W.	Max T.W.
I	Weight Carrying	2000 lbs.	200 lbs.
II	Weight Carrying	3500 lbs.	300 lbs.
III	Weight Carrying	5000 lbs.	500 lbs.
IV	Weight Distributing	10000 lbs.	1000 lbs.
V	Weight Distributing	14000 lbs.	1700 lbs.

(G.T.W.=Gross Trailer Wt. T.W.=Tongue Wt.)

Note: Carrying capacities may vary by hitch manufacturer. The above chart is to be used as a guide only. Please consult the hitch manufacturer for more information concerning your specific needs.

TRAVEL TRAILER

Coupler

The travel trailer coupler fits a ball hitch. A weight-distributing (load-equalizing/leveling) hitch may be recommended for your unit. This type of hitch helps keep both the tow vehicle and the RV level by distributing part of the hitch weight forward to the tow vehicle's front axle and back to the trailer's axle(s).

- Turn the front jack handle clockwise (or activate your power jack) and raise the coupler above the hitch ball.
- Position the tow vehicle so that the ball is directly under the coupler. Lift the coupler lever up as far as possible.
- Turn the front jack handle counterclockwise (or activate your power jack) and lower the coupler onto the ball.
- Secure the connection by pushing the coupler lever down until the latch shoulders rest on the top surface of the coupler.

Note: For theft protection, you may wish to purchase a locking device that inserts through the coupler lever and the bracket holes.

NOTES:

Front Jack
Turn the crank counterclockwise until the dolly wheel/jack foot is off the ground. Remove the wheel or foot and store it. Continue turning the crank until the front jack is as high as possible; this will prevent it from hitting the ground during travel. If you have a power front jack, activate the switch and fully retract the jack. Depending on the model of your power jack, you may have to remove the switch cover before activating the switch; be sure to replace the switch cover after use.

Safety Chains/Electrical Connections
Cross the safety chains under the "A" frame and attach them to the tow vehicle's hitch platform. Plug the pigtail into the tow vehicle's electrical harness. Leave enough slack in the chains and the pigtail to allow the unit to turn freely. Safety chains and pigtails should **not** touch the ground.

Breakaway Switch
The breakaway switch is a safety device that will automatically activate your RV's electric brakes if your RV unit accidentally separates from the hitch. Attach the switch-activating cable to the tow vehicle bumper or to the tow bar portion of the hitch platform. Do not loop the cable around the hitch ball. Adjust the cable length so that it pulls the pin out of the switch before the coupler drops onto the safety chains. Be sure to allow enough slack so that both vehicles turn freely without pulling the pin from the breadaway switch.

Lubricate the pin periodically to ensure good seperation. Each time before using your trailer, be sure the pin is securely in place.
Do not use the breakaway switch as a parking brake; it is intended for emergency use only.

Note: The tow vehicle battery will not supply power to your unit's brakes if a separation occurs. If the pigtail also disconnects, the unit's brakes will not work unless an RV battery has been installed. Keep batteries charged at all times to ensure safe operation.

WARNING!!!
The tow vehicle battery will not supply power to your unit's brakes if a separation occurs.

Hitch Ball Height
When the loaded trailer is hitched to the tow vehicle, check the ball height. This can be determined by measuring the distance from the top of the curved portion of the coupler to the ground. Adjust the equalizing bars of the hitch assembly so that the tow vehicle and the trailer are essentially level.

A high hitch will transfer weight behind the axle(s) and cause the vehicle to fishtail. A low hitch will transfer additional weight to the hitch. Refer to the hitch manufacturer's instructions to adjust the weight distributing hitch to the proper height.

NOTES:

FIFTH WHEEL

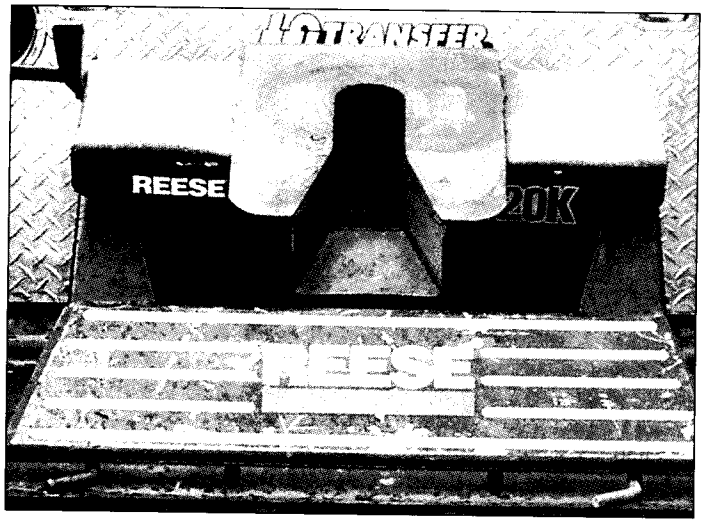
Coupler

The fifth wheel coupler fits a pin-type connection. The fifth wheel can be towed only by a pickup truck. Be sure the truck can carry the hitch weight of your RV. The hitch weight for your RV is listed in the sales brochure.

Hitch/Hook-Up

Fifth wheel hitch assemblies come in varying total weight and pin weight capacities. Please consult a local hitch supplier or the manufacturer for further information.

1. Lower or remove the tailgate of the pickup truck.
2. To release the hitch plate jaws pull the handle until a snap is heard.
3. Back the truck up until the pin is caught by the plate jaws.
4. Once connected, activate your electric jacks or turn the jack crank hangle counterclockwise to raise the jacks as far as possible.
5. Remove the pin in each jack.
6. Raise the adjustable part of the jack as far as possible and reinsert the pin to hold the jack in position.



There are several types of fifth wheel hitches. Although the one described here is typical, have your dealer demonstrate and explain the proper hitching and unhitching procedure for your vehicle's hitch.

Electrical Connection

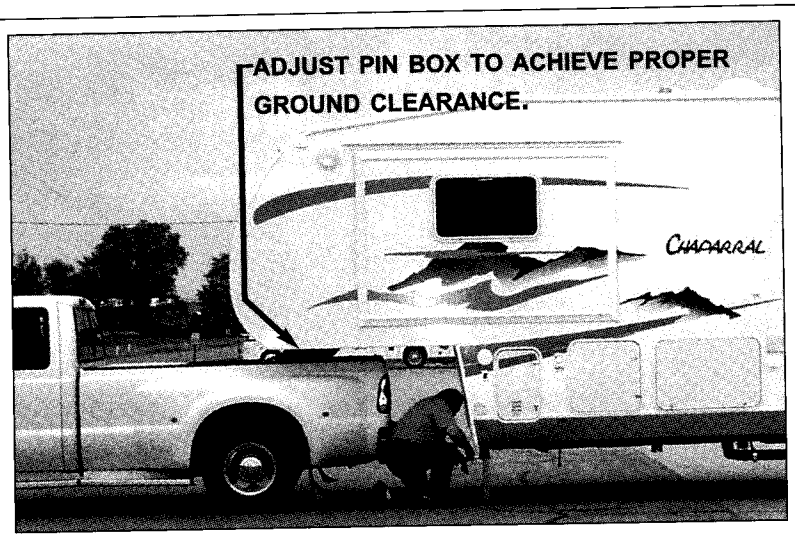
Plug the pigtail into the electrical harness of the truck. Be sure there is enough slack to allow the vehicle to turn without disconnecting the pigtail.

Ground Clearance

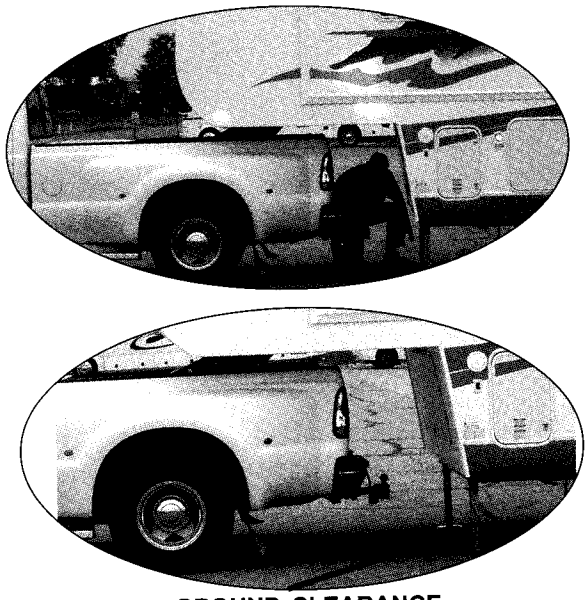
When the loaded unit is connected to the tow vehicle, check the ground clearance. If the front of the unit is too high, weight will be transferred behind the axle(s). This could cause the unit to fishtail. If the front of the unit is too low, additional weight will be transferred to the truck.

For proper height, adjust the pinbox by removing the bolts on each side. Raise or lower the box until the holes are aligned, and then reinsert and tighten the bolts.

NOTES:



FIFTH WHEEL GROUND CLEARANCE



GROUND CLEARANCE

WARNING!!!
Do not allow the safety chains or the pigtail wiring to drag on the ground. This could cause excessive wear and possibly prevent the tail lights from working and weaken the safety chain. Be sure the hitch pin is securely in place before using your RV.

Loading
Distribute your cargo evenly from side-to-side and from front-to-back. Load-leveling hitches are available; however, rely on some experienced recommendations to determine if your vehicle and tow vehicle are suitable for such a load-leveling hitch.

Heavier items should be stored in a central location, on or near the floor. They should be secured so they cannot slide during a sudden stop. Loose cargo can cause damage and alter your load balance. Lighter items can be stored in overhead cabinets or other areas.
Remember to leave space and weight allowance for items you may purchase during your travels. A properly loaded unit can help conserve fuel and prevent excessive wear on your tow vehicle.

Weight Determinations
It is extremely important that you weigh your unit before you leave on a trip. Check the Gross Axle Weight Rating (GAWR) and the Gross Vehicle Weight Rating (GVWR) found on the Federal Sticker affixed to each vehicle.

The Federal Sticker or certificate lists the unit Serial Number and the front and rear GAWR and GVWR. It is located on the left outside front corner of your vehicle. Your tow vehicle has a similiar sticker. The ratings listed on each sticker is for the specific wheel and tire sizes listed.

NOTES:

You can weigh your vehicle at a grain elevator, sand and gravel dealer or government weighing station. Weigh your unit fully loaded. There may be a small fee for weighing your vehicle; however, it is an investment in safe traveling and peace of mind. Check your Yellow Pages for the address and telephone number of the weighing facility nearest you.

MFD. BY:			DATE:	
INC. VEH. MFD. BY:			DATE:	
GAWR LB	TIRES	PSI COLD SINGLE	PSI COLD DUAL	RIMS
FRONT				
INTERMEDIATE				
REAR				

GVWR LB.	MODEL NUMBER
TYPE	VEHICLE ID NUMBER

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN:

We suggest that you record this sticker information in the space provided to ensure that you always have the information close at hand.

GVWR _____ GAWR Front _____

GAWR Rear _____ with _____ tires

RIMS _____ at _____ PSI cold

Note: Exceeding the GVW and GAW ratings for your unit could result in serious damage to the suspension, frame or other components of your vehicle and void the warranty on those parts. Use of heavier suspension components (springs, shocks, axles) or heavier-ply tires does not increase the weight ratings printed on the tow vehicle's certification plate.

The GAWR of each axle is determined by the axle system components with the lowest weight-carrying capacity. To avoid overloading your vehicle, check the GVWR and GAWR.

WEIGHT DEFINITIONS

- **GVWR--**(Gross Vehicle Weight Rating) is the maximum permissible weight of this vehicle. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the Net Carrying Capacity.

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

- **UVW--**(Unloaded Vehicle Weight) The weight of the unit with no fluids, cargo, optional equipment or accessories.

- **Hitch Weight--**The weight at the hitch of this model with the unit sitting level. This weight includes typical options, but does not include the weights of full fresh water tanks, full holding tanks, and full LP gas tanks.

NOTES: _____

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Coachmen®

- **CCC--**(Cargo Carrying Capacity) This is equal to the GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater) and full LP gas weight. A sample Computation of the Cargo Carrying Capacity is included on the Weight Information Sheet.

Note: See sample Weight Information Sheet on the next page.

⚠ CAUTION!!!
Exceeding the GVW and GAW ratings for your unit could result in serious damage to the suspension, frame or other components of your vehicle and **void the warranty on those parts.**

It is not recommended that you tow anything behind your travel trailer or fifth wheel. If weight is added to the back of the vehicle (which takes weight off the hitch pin), damage could occur to the frame, and towability could be affected. You could also be violating state laws pertaining to vehicle length, as well as **voiding warranty coverage.**

TIP: A properly loaded unit can help conserve fuel and prevent excessive wear on your tow vehicle.

Four Corner Weights
When possible, it is desirable to obtain the individual weights at each tire, (dual tires on the rear). This requires using scales which are capable of measuring each corner weight individually.

The corner weights should not exceed 1/2 of the respective Gross Axle Weight Rating (GAWR) or the maximum load rating for the tire (or set of dual tires at the rear), **whichever is less.** The maximum load rating for the tire can be found embossed on the tire's sidewall.

Note: If any of the corner weights exceed 1/2 of the listed GAWR or tire ratings, relocate the passengers and redistribute or remove a portion of the cargo until the weight is within the proper limits for all four corners of the vehicle.

S•A•M•P•L•E

WEIGHT SHEET

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7,600 LBS. GVWR(GROSS VEHICLE WEIGHT RATING) means the maximum permissible weight of this trailer. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the net Carrying Capacity.

4,849 LBS UVW(UNLOADED VEHICLE WEIGHT) means the weight of this trailer as built at the factory. If applicable, it includes full generation fuel engine oil, and coolants. The UVW does not include cargo, fresh water, LP gas, or dealer installed accessories.

2,751 LBS NCC(NET CARRYING CAPACITY) means the maximum weight of all personal belongings, food, fresh water, LP gas, tools, dealer installe accessories, etc.,that can be carried by this trailer. (NCC is equal to or less tnan GVWR minus UVW).

GVWR in KG	3,446.7	
UVW in KG	2,199.0	
weight of water	294	(lbs)
	134.5	(kgs)
volume of water	35.4	(gls)
Weight of LPG	40	(lbs)
	19.0	(kgs)
volume of LPG	9.5	(gls)
CCC for trailer	2,417	(lbs)
	1,096.1	(kgs)

TOTAL WEIGHT ON AXLES SHOULD NOT EXCEED COMBINED AXLE RATING: 7,000 LBS
DO NOT EXCEED 3,500 LBS. PER AXLE

NOTES:

DRIVING

Get to know how your tow vehicle handles with the added weight of your RV. The brakes and steering operation will be different. Before leaving on a trip, practice making right and left turns, braking, backing and accelerating. Your RV is designed to travel at maximum legal highway speeds under ideal conditions. Under less than ideal conditions, your vehicle should be operated at reduced speed and it should never exceed the posted legal speed limits. Before you travel be sure to read the PRE-TRAVEL CHECK in this manual. Below are tips to help you.

Clearance
Be sure to read "Clearance Height" signs on overpasses, drive-through windows, etc. Watch out for overhanging tree branches, awnings or similar obstructions that can damage your vehicle's roof or roof-mounted equipment and accessories. Check with your dealer for clearance measurements of the unit.

Pulling into Traffic
Check for oncoming traffic in all directions. Signal before entering the flow of traffic. Always accelerate slowly and smoothly; the added weight of your RV makes quick acceleration not only difficult but potentially unsafe.

Passing
Avoid sudden maneuvers when passing a slower moving vehicle. Remember that additional time and distance are required to pass safely. Wait until the road is clear of oncoming traffic for at least 1/2 mile. Check the outside rearview mirrors and signal lane changes before passing other vehicles. When you have safe clearance, signal lane change and return to your original lane.

Braking
Allow a safe distance to stop; follow no closer than one combined tow vehicle/RV length for each 10 mph. A sudden stop may cause your unit to jackknife.

Backing Your RV
It is very important that you back the RV slowly. Trying to maneuver the RV as you would in normal driving could cause the unit to jackknife, hit your tow vehicle or cause other damage. The same hazards could result from turning the wheels too sharply when backing the vehicle or when driving normally.

Backing the unit may require stationing someone beside the unit to guide the driver. When backing your RV, place your right or left hand at the bottom of the steering wheel. To move the trailer to the left, move your hand to the left; to move the trailer to the right, move your hand to the right. If the trailer starts to jackknife, stop, pull forward and start the procedure again.

If you have never backed a tow vehicle and trailer before, practice backing up, or check with your delaer for technique tips.

NOTES:

Swaying or Fish-tailing
If this happens while you are towing a vehicle, accelerate slightly and then gradually slow down. If your unit still sways, pull off the road and check the following:

1. Height of equalizer hitch
2. Distribution of cargo
3. Tire pressure
4. Tow vehicle front-end alignment and suspension

Turning
The wheels of your RV are set wider than those of your tow vehicle. Pull several feet farther ahead before turning. This will compensate for the extra width and length of your RV and will help you avoid hitting curbs or parked vehicles.

Downgrades/Upgrades
When going downhill, reduce your speed and shift the transmission to a lower gear to assist in braking on long or steep downgrades.

To avoid engine overheating when climbing a steep grade, reduce speed and shift the transmission to a lower gear.

Parking on a Grade
Parking vehicles on an upgrade or downgrade is not recommended. If it is necessary in an emergency, apply the brakes and have a passenger place wheel chocks on the downhill side of the tires of your RV. When in place, slowly release brakes until the unit is stopped by the chocks. Apply parking brake and shift transmission into PARK position (place manual transmission vehicles in gear).

Freeing a Stuck Vehicle
To pull your unit out of the snow, sand or mud, apply slight pressure to the accelerator pedal and move the gear selector rhythmically between first gear and reverse gear. If possible, keep the front wheels pointed straight ahead. Avoid sharp turns. Once the unit starts to move, do not stop until it is on firm ground.

LEVELING/CHOOSING A CAMPSITE

Campsite Selection
There are many campground guides that will assist you in making your selection. Most campgrounds accept reservations, and during peak seasons, it is wise to do so. If possible, arrive early so you can inspect and choose your campsite during the daylight hours.

During the winter months it is desirable to take advantage of natural windbreaks like trees, bushes or any similar type of windbreak. This will cut down the possibility of cold drafts that can affect the comfort level of your unit.

NOTES:

Set-Up
It is very important that your unit is level. This allows your refrigerator and drainage systems to operate properly (both function by gravity). To level your RV, place a level on the bottom of the refrigerator's freezer compartment or on a normally level location inside the vehicle.

You may wish to permanently attach levels (available at your dealer) on the front and/or back and sides of the RV. This will allow you to tell at a glance if you've stopped on a level site and will help speed the leveling process.

Side to Side Leveling
If the unit needs side-to-side leveling, make a step leveling ramp on the low side out 1"x 6" or 2" x 6" boards of varying lengths. Pull the unit forward or back onto the leveling ramp until the low side is level. Many experienced RV'ers carry leveling boards or blocks in their unit for this purpose.

WARNING!!!
Stabilizer jacks are designed for stabilizing only. **Do not** attempt to use them to support the full weight of the RV.

TIP: Using blocks under the jacks will help keep the unit level and won't allow the jacks to sink into the ground.

Front-To-Back Leveling
Travel Trailer
To level a travel trailer from front-to-back, prepare to unhitch the unit from the tow vehicle by installing the dolly wheel/jack foot and crank or run the front jack down. Never rest the unit on the front jack without the dolly wheel/jack foot being attached, or without a board under it. (A dolly wheel/jack foot is not recommended with a power jack.)

If the ground or surface is soft, place a board under the dolly wheel/jack foot or jack. Disconnect the safety chains, the pigtail and the breakaway cable fromt he tow vehicle. Move the front jack up or down until the unit is level.

Jack stands, available from your dealer, may be placed under the frame to eliminate sway when persons move about inside the unit. If you use a jack stand, lower the front jack about two inches below level. Place a jack stand under both main frame members NEVER AGAINST THE FLOOR at the rear of the trailer.

NOTES:

Raise each jack unitl it touches the frame. Raise the front jack about two inches above level, and place jack stands under the main frame members near the front of the unit. Raise the jacks until they touch the frame, then lower the front jack to level.

Level unit by moving jacks up or down. Install jack stands at the rear of the fifth wheel by lowering the front jacks two inches below level and placing jacks under the rear main frame members—NEVER AGAINST THE FLOOR. Raise these jacks until they touch the frame. Level by raising the front jacks.

Some RV's will have installed, for your convenience, permanently mounted stabilizing jacks. If your RV has this type of jack, unhitch the RV and, using the RV's front jack, get a front to rear level. Check level for low side of trailer (some camping sites are not level and it will be necessary to use a leveling ramp on the low side of the trailer). Lower the stabilizing jacks on the LOW side of the trailer to a level position. Lower the stabilizers on the opposite side of the trailer to the ground and firm up.

An angle of 55 to 60 degrees on the jack legs provides the best stabilization. Before moving your trailer, crank the stabilizers to the fully closed position, and give quarter turn to tightly secure.
If your unit has a power front jack, you may have to remove the switch cover to run the jack up or down. The switch is spring-loaded and will return to the OFF position when released. If your power jack has a switch cover, be certain to replace it when the switch is not in use. Familiarize yourself with the direction and travel of the jack post and the corresponding switch direction.

Fifth Wheel
To level the fifth wheel, lower the front jacks. Place a board under each jack foot. Disconnect pin hitch, pigtail and breakaway cable. Remove or lower tailgate and move truck away.

Level unit by moving jacks up or down. Install jack stands at the rear of the Fifth Wheel by lowering the front jacks two inches below level and placing jacks under the rear main frame members—NEVER AGAINST THE FLOOR. Raise jacks until they touch the frame. Level by raising the front jacks.

SLIDE ROOM OPERATION

FAILURE TO ACT IN ACCORDANCE WITH THE FOLLOWING MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

ABOVE FLOOR SLIDEOUT SYSTEM
The Lippert Above Floor Slideout System is intended for the sole purpose of extending and retracting the slideout room. It's function should not be used for any other purpose or reason than to actuate the slideout room. To use the system for any reason other than what it is designed for may result in damage to the coach and/or cause serious injury or even death.

NOTES:

Before actuating the system, please keep these things in mind:
1. Parking locations should be clear of obstructions that may cause damage when the slideout room is actuated.
2. Be sure all persons are clear of the coach prior to the slideout room actuation.
3. Keep hands and other body parts away from slideout mechanisms during actuation. Severe injury or death may result.
4. To optimize slideout actuation, park coach on solid and level ground.

DESCRIPTION

The Lippert Above Floor Slideout System is a rack and pinion style slide system. Utilizing a bi-directional electric motor to actuate the drive shaft, the slideout room is extended and retracted from the same source. The actuator has a built-in automatic braking feature. The Lippert Above Floor Slideout System is designed as a negative or positive ground system.

There are no serviceable parts within the electric motor. If the motor fails, it must be replaced. Disassembly of the motor voids the warranty. Mechanical portions of the slideout system are replaceable. Contact Lippert Components, Inc. to obtain replacement parts.

PRIOR TO OPERATION

Prior to operating the Lippert Above Floor Slideout System, follow these four(4) guidelines:
1. Coach should be parked on the most level surface available.
2. The PARKING BRAKE must be engaged.
3. The coach's transmission must be in PARK.
4. The coach's ignition must be in the ON or RUN position or the coach's engine must be running. (Class A and C only; Gas and Diesel)

WARNING!!! OPERATING SYSTEM
FAILURE TO ACT IN ACCORDANCE WITH THE FOLLOWING MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

EXTENDING SLIDEOUT ROOM

1. Level Unit
2. Verify the battery is fully charged and hooked up to the electrical system.
3. Remove transit bars (if so equipped).
4. Press and hold the IN/OUT switch in the OUT position until room is fully extended and stops moving.
5. Release switch, which will lock the room into position.

Note: If the slideout switch is held after the room is fully extended, the control will sense that the room has stopped and will shut off the motor after a few seconds.

RETRACTING SLIDE-OUT ROOM

1. Verify the battery is fully charged and hooked up to the electrical system.
2. Press and hold the IN/OUT switch in the IN position until the room is fully retracted and stops moving.
3. Release the switch. This will lock the room into position.

Note: If the slideout switch is held after the room is fully extended, the control will sense that the room has stopped and will shut off the motor after a few seconds.

4. Install the transit bars (if so equipped).

NOTES:

MANUAL OPERATION (Above Floor System)

The Lippert Above Floor Slideout System Motor is equipped with a Manual Override system that allows you to extend or retract a room if the rooms do not move when switch is pushed. Check the troubleshooting guide on pages 9-11 for possible solutions before using the backup auxiliary system.


Fig. 6

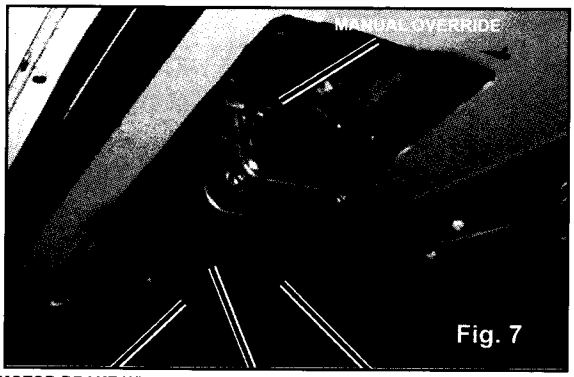


Fig. 7

MOTOR BRAKE WIRE (BROWN) | POSITIVE WIRE (RED) | GROUND WIRE (BLACK)

1. Accessing Out-Stop Assembly

Note: The slideout Out-Stop Assembly will be accesible from the INSIDE of the unit. The Slideout Motor and Mechanism is accessible from the OUTSIDE.

4. With a second person assisting, one person must push and hold the MANUAL OVERRIDE switch (Fig. 3C; pg. 5) in the unit, located on the control panel, while the other person, using a 5/8" wrench or socket/ratchet combination, rotates the hex head MANUAL OVERRIDE (Figs. 8 & 9) to manually move the slideout.

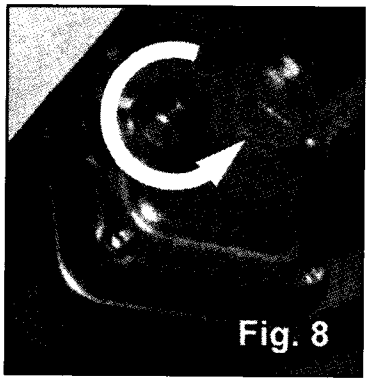


Fig. 8

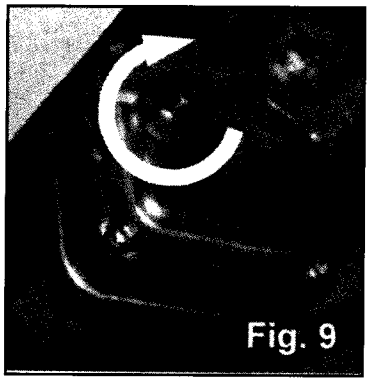


Fig. 9

BELOW SLIDEOUT SYSTEM

The Lippert Below Floor Slideout System is intended for the sole purpose of extending and retracting the slideout room. It's function should not be used for any other purpose or reason than to actuate the slideout room. To use the system for any reason other than what it is designed for may result in damage to the coach and/or cause serious injury or even death.

The Lippert Below Floor Slideout System is a rack and pinion style slide system. Utilizing a bi-directional electric motor to actuate the drive shaft, the slideout room is extended and retracted from the same source. The actuator has a built in automatic clutching feature. The Lippert Below Slideout System is designed as a negative or postive ground system.

The Lippert Below Slideout System is mounted into the frame and allows the floor of the slideout room, in the fully extended position, to be flush with the floor of the unit, in some circumstances. There are no serviceable parts within the electric motor. If the motor fails, it must be replaced.

Note: Disassembly of the motor voids the warranty.

NOTES:

WARNING!!
ALWAYS MAKE SURE THAT THE SLIDEOUT ROOM PATH IS CLEAR OF PEOPLE AND OBJECTS BEFORE AND DURING OPERATION OF THE SLIDEOUT ROOM.

EXTENDING SLIDEOUT ROOM

1. Level Unit
2. Verify the battery is fully charged and hooked up to the electrical system.
3. Remove transit bars (if so equipped).
4. Press and hold the IN/OUT switch (Fig. 4B) in the OUT position until the room is fully extended and stops moving.
5. Release switch, which will lock the room into position.

Note: Only hold OUT switch until room stops.

RETRACTING SLIDEOUT ROOM

1. Verify the battery is fully charged and hooked up to the electrical system.
2. Press and hold the IN/OUT switch (Fig. 4A) in the IN position, the room is fully retraced and stops moving.
3. Release the switch. This will lock the room in position.

Note: Only hold IN switch until room stops.

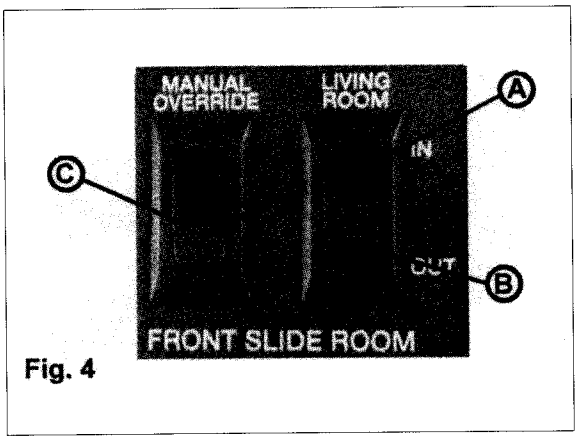


Fig. 4

MANUAL OPERATION

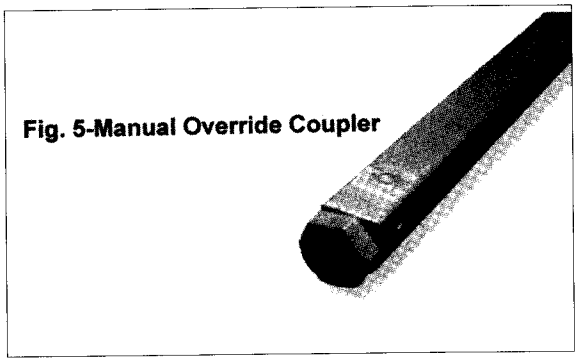


Fig. 5-Manual Override Coupler

1. Prior to Manual Operation, be sure slideout area is clear of any obstrucations that may impede the extention or retraction of the slideout room, including transit bars.
2. System is made up of left and right slideout arms or rails. In front wheel well, located the Manual Override Coupler (Fig. 5).
4. Fit a 15/16" socket and ratchet, open or closed end wrench or nut driver and power drill over the Manual Operation Coupler.
5. A second person is required to be on the inside of the unit to push the MANUAL OVERRIDE SWITCH (Fig. 4) The switch must be pushed up into the on position and held during the entire process of manually moving the room.
6. When the slideout room has been retracted or extended to the desired location, the MANUAL OVERRIDE SWITCH can be released. By releasing the switch, the motor brake is reset to keep the slideout room in place.

NOTES:

ABOVE SOFA/BEDROOM SLIDEOUT SYSTEM

The Lippert Sofa/Bedroom Slideout System is a rack and pinion style slide system. Utilizing a bi-directional electric motor to actuate the drive shaft, the slideout room is extended and retracted from the same source. The actuator has a built-in automatic clutching feature. The Lippert Sofa Slideout System is designed as a negative or positive ground system.
There are no serviceable parts within the electric motor. If the motor fails, it must be replaced.

Note: Disassembly of the motor voids the warranty.

EXTENDING SLIDEOUT ROOM

1. Level the unit.
2. Verify the battery is fully charged and hooked into the electrical system.
3. Remove the transit bars (if so equipped).
4. Press and hold the IN/OUT switch (Fig. 4C) in the OUT position until the room is fully extended and stops moving.
5. Release switch, which will lock the room into position.

Note: If the slideout switch is held after the room is fully extended, the control will sense that the room has stopped and will shut off the motor after a few seconds.

RETRACTING SLIDEOUT ROOM

1. Verify the battery is fully charged and hooked into the electrical system.
2. Press and hold the IN/OUT switch (Fig. 4C) in the IN position until the room is fully retracted and stops moving.
3. Release switch, which will lock the room into position.
4. Reinstall transit bars (if so equipped).

Note: If the slideout switch is held after the room is fully retracted, the control will sense that the room has stopped and will shut off the motor after a few seconds.

MANUAL OPERATION

The ABF-24-711-18:1 is equipped with a backup auxiliary powr (BAP) system that allows you to extend or retract a room if the rooms do not move when switch is pushed.

1. Locate coach's house battery and disconnect the leads.
2. Acess the slideout mechanism.
3. Disconnect the motor wire.

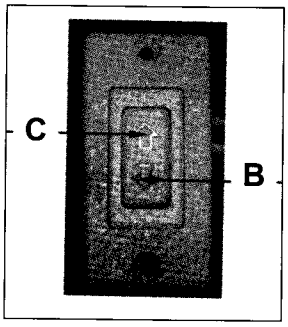


Fig. 4 Slideout Switch and Switch Plate

Fig. 5

Note: This is an above floor style slideout. The motor and slideout mechanism is located inside the coach.

NOTES:

Note: Only one lead needs to be disconnected.

Caution!! If neither lead is disconnected from battery, actuating the system may push and electrical charge back through the motor and damage the motor or other electrical components.

4. Using a 5/8 in. wrench or socket/ratchet combination, rotate the shaft in the counterclockwise to retract slideout room.

5. Using a 5/8 in. wrench or socket/ratchet combination, rotate the shaft clockwise to extend slideout room

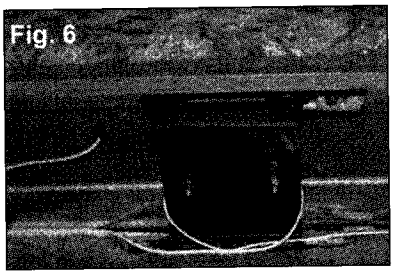


Fig. 6

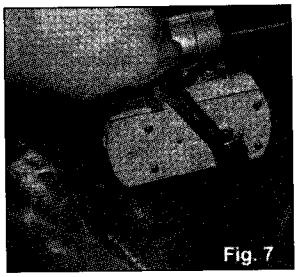


Fig. 7

Note: Once the room has reached it's fully extended/retracted position, apply pressure to the wrench to firmly set the room. The worm gear in the gear box will prevent the room from drifting in or out.

AIR QUALITY

CONDENSATION

Condensation is "the process by which a gas or vapor is changed to liquid". This process occurs when there is too much moisture in the air and not enough air movement. It can be a problem in modern, tightly-constructed, well insulated RVs. Certain amounts of condensation should be expected, especially on cool surfaces such as windows, roof vents, and metal door frames. However, excessive condensation can cause water damage and infiltrate the RVs' insulation causing it to become damp, thus reducing its' insulation properties.

Condensation can appear as fog, frost or ice on the inside of windows indicating moisture is trying to escape to mix with drier air. It may also occur inside the walls and ceilings where it is hidden from view. Evidence of trapped water vapor or hidden condensation could be water stains on the ceiling, warped moldings or trims, water running down the walls, dripping from fixtures or softened wall or ceiling materials. Other indicators of excessive moisture could be damp carpet, paint failure, mold or mildew and damage to furniture. If any of these situations listed above should occur, be sure to check all the normal functions of your RV, such as plumbing, seals, windows and roof, before assuming it is condensation. Just like your home, inspections and maintenance should be performed on a regular basis.

FORMALDEHYDE EMISSIONS

Some of the construction materials used in recreational vehicles emit formaldehyde. Eye, nose, and throat irratation, headache, nausea, and a variety of asthma-like symptoms, including shortness of breath, have been reported as a result of formaldehyde exposure. Elderly persons and

young children, as well as anyone with a history of asthma, allergies, or lung problems, may be at greater risk. Research is continuing on the possible long term effects of exposure to formaldehyde.

Reduced or limited ventilation may allow formaldehyde and other contaminants to accumulate in the indooor air. Ventilation is available in your recreational vehicle through screened windows, roof vents, power roof vents and range vents. Additional ventilation to dilute the indoor air may be obtained by ventilation systems available through your dealer. In addition, aftermarket products such as air purifiers, or natural odor control products (i.e. Natures Nonscents™, available at kruegerenterprises.com) are readily available and can be very effective.

High indoor temperatures and humidity raise formaldehyde levels. When your recreational vehicle is located where it will be subjected to extreme summer temperatures, use your air conditioner to control indooor temperature levels. When storing your RV in extreme summer temperatures, be sure your RV is properly ventilated. Always allow your RV to "air out" or ventilate before leaving on a trip. Proper ventilation is essential while traveling or camping in your RV. If you have any questions regarding the health effects of formaldehyde, consult your doctor or local health department.

Keep in mind that your RV is a confined space and unlike a permanent dwelling, has limited venting capacity. Activities such as cooking, dish washing, cleaning, laundry and bathing add moisture to the air, so when performing these functions remember to keep your RV well ventilated to allow moisture to escape. By being aware of the causes, you may also be able to decrease the risks.

Your recreational vehicle was designed primarily for recreational use and short term occupancy, not a permanent dwelling. If you use your RV as a permanent dwelling or for prolonged periods of time, it is more susceptible to this condition. The number of inhabitants and pets residing in your RV are also a factor, as breathing and perspiration are impossible to avoid but do add to the moisture content in your unit.

If you intend to use your RV for an extended period, be prepared to take steps to prevent condensation, mold or mildew. Prevention can be a scheduled event, on your time frame; an unexpected repair is not only inconvenient, but can be more costly.

WARNING!!!
Do not cover emergency window(s). These exit windows must remain accessible at all times.

CAUTION!!!
Damage or deterioration due to long term occupancy may constitute an "unintended use" of your RV and will not be covered under your warranty.

CONTROLLING CONDENSATION

- **QUICK ACTION** - If leaks or spills occur indoors, clean it up quickly. In most cases mold

NOTES:

and mildew do not grow if the area is dried within 24-48 hours.

- **REPAIR** - Regularly clean and repair any items installed on the roof. Check for debris or blockages in the vents. (If roof vents are properly maintained and sealed, yet you still have water dripping from the vents, it could be condensation.) Be sure all seals are tight, and check for loose screws or moldings
- **LOWER THE HUMIDITY INSIDE YOUR RV** - Keep indoor humidity below 60 percent relative humidity, (ideally between 30-50 percent). Relative humidity can be measured with a humidity meter, which is available at most hardware stores. The meter is an inexpensive way to avoid the far more costly repairs of water damage.

Note: Even if it is raining or snowing, opening a vent for more air circulation will decrease moisture. Ventilated air from outside is drier than interior air.

REDUCING HUMIDITY LEVEL

- When bathing, open the bathroom vent to allow steam and moisture to escape.
- Avoid hanging wet clothing inside to dry .
- If using a clothes dryer, be sure it is properly vented according to manufacturer's instructions.
- Remove and dry wet shoes and rain gear. Avoid allowing them to air dry inside causing rain or snow to soak into the carpet or rug.
- When cooking, avoid boiling. As an alternative, use the microwave when possible. Many items can be cooked in the microwave with minimal water.

Note: If you follow these guidelines and continue to have an excessive amount of moisture, you may want to consider using a dehumidifier.

REMINDER: Left unchecked, these repairs could become very costly and this type of preventable damage is not warrantable.

WARNING!!!

Do not use the oven or range for heating purposes or to eliminate the effects of condensation. In addition to hazardous toxic fumes, open flames will add moisture to the interior air, thus increasing the condensation content.

REDUCING MOISTURE

This guide outlines important recommendations to manage moisture in your new RV to avoid moisture-related damage, such as mold, which is caused by moisture. The materials and methods used to construct your RV were selected in part to minimize air leakage and to create a weather tight exterior shell. However, in order to protect your investment and reduce the risk of moisture-related damage and costly repairs, attention and care has to be taken to manage moisture inside your RV.

This easy-to-read moisture management guide covers:

1.0 Interior Care of Your RV
2.0 Exterior Care of Your RV

These suggestions are intended to minimize moisture-related issues with your RV. To maintain the value of your investment, please read and follow your owner's manual and the suggestions provided below. Contact your manufacturer if you have any questions.

1.0 Interior Care of Your RV
Signs of excessive moisture can be obvious, such as water droplets forming on surfaces or wet carpet. Conversely, signs of excess moisture can be subtle, such as condensation forming on metal surfaces. When symptoms appear it is important to timely determine the cause of the excess moisture and take appropriate corrective action to prevent moisture related damage.

1.1 Control Relative Humidity
Monitoring and controlling relative humidity within the RV is one of the most important steps to minimize the risk for moisture-related damage. Ideally, relative humidity should be at 60% or less. Relative humidity can be monitored utilizing a portable hygrometer, a small device that measures temperature and relative humidity. Hygrometers are available at electronics or building supply stores for approximately thirty dollars ($30).

Use exhaust fans, the air conditioner, and /or a portable de-humidifier to manage moisture inside the RV to maintain relative humidity at 60% or less. In cold climates, relative humidity may need to be at 35% or less to avoid window condensation issues.

If the RV is used the majority of the time in a hot-humid climate, it may be difficult to keep relative humidity below 60%. A de-humidifier will help, but it is important to check the condensation (water) collection bucket regularly or discharge the condensation (water) directly to a drain.

1.2 Avoid Drastic Thermostat Setbacks
Cooler surface temperatures increase the potential for condensation and surface mold growth. To minimize the opportunity for condensation to form on interior surfaces, maintain a comfortable temperature in your RV, and avoid nighttime setbacks of 10 degrees or more. Drastic setbacks that reduce the indoor air temperature quickly can increase the chance for airborne moisture to condense on cool surfaces such as windows. If you are away from your RV for an extended number of days, we recommend that you do not set the temperature back without taking other measures to manage relative humidity, including operating a de-humidifier with a continuous drain.

1.3 Manage Window Condensation
Window condensation issues can be identified by water or ice-build up, usually at the base of the window. The majority of these problems can be addressed by managing moisture generated inside the RV. Minor condensation issues are not unusual, especially for RV's used in colder climates.

NOTES:

The key is to manage this small amount of moisture if evident by wiping the surface, and as discussed in 1.1 above, maintaining a reasonable relative humidity within the unit.

To help minimize window condensation, use exhaust fans vented to the outside, avoid drastic changes in thermostat settings, do not use 'vent-free' heaters and use window coverings wisely. For example, make sure to open curtains or blinds during the day to allow air to circulate and warm the window surface.

1.4 Carpet Care and Moisture Management
To keep your carpet serviceable and looking new for years to come, the carpet should be cleaned when it shows signs of discoloration or traffic patterns. A steam cleaning system should be used to clean the carpet unless otherwise noted in your owner's manual or warranty information. To manage moisture from the cleaning process, the cleaning system needs to be capable of extracting the excess water from the carpet after it has been cleaned. Important: Be sure the carpet is thoroughly dry before closing up the RV for storage. Water from the cleaning process can cause significant damage to the RV if the carpet is not completely dry before closing up the RV for an extended period.

1.5 Cleaning Tile and Wood Floors
Please refer to your owner's manual or warranty information for cleaning instructions for the tile or wood floor installed in your RV. Most floors only require a mild detergent and warm water for cleaning. More water on the floor is not always better for cleaning. Use a damp cloth to clean on a regular basis rather than wet mopping each time.

1.6 Storage & Other Isolated Areas within the RV
Storage areas are more difficult to condition since the areas are isolated from the main body of the RV. The surfaces of these areas are more at risk for condensation and surface mold growth. To minimize this risk, clean storage areas regularly, and allow an air space between stored items and the exterior wall to promote air circulation.

1.7 Use of Un-vented Combustion Equipment
Un-vented combustion equipment, such as propane stove tops are a source of moisture within the RV. For every gallon of fuel consumed, approximately one gallon of water vapor is evaporated into the air. Whenever possible, operate an exhaust fan in combination with the use of any un-vented combustion appliance within the RV. Water vapor and other combustion byproducts should be vented to the exterior of the RV. The RV owner should strictly follow use and maintenance instructions for safe operation of any combustion equipment, particularly un-vented equipment.

2.0 Exterior Care of Your RV
The exterior shell of the RV is the primary weather and moisture barrier. Over the life of the vehicle, the shell will require regular care and maintenance in accordance with the owner's manual. The shell includes the roof, sidewalls, windows, doors, and under-floor of the vehicle. Particular attention needs to be devoted to ensure these components are maintained to ensure a tight barrier against bulk water intrusion.

The shell should be inspected periodically for tears, gaps, and condition of sealants in accordance with your owner's manual. Areas that require maintenance should be re-sealed utilizing a similar, high quality sealant used by the manufacturer.

Particular attention should be devoted to ensure the slide out(s) are functioning properly. Each time a slide out is used it should be inspected to ensure proper operation and sealing. The slide out gaskets should also be inspected to ensure proper sealing when the slide out-is operated.

3.0 Use of Your RV

It is important to remember that the square footage of an RV is significantly less than that of a single family residence. This fact alone will elevate the relative humidity because there is less volume of air to help absorb or dissipate the humidity. For example, showering and cooking create a lot of humidity in a small area. In these instances, use of an exhaust fan and opening windows should reduce the relative humidity, particularly when living in the RV for an extended period.

4.0 Severe Environments

Prolonged use of your RV in severe environments - for example in extremely cold or hot-humid climates, will require extra care and maintenance to avoid moisture-related issues.

In both extremely cold and hot-humid climates, more attention needs to be-focused on controlling relative humidity within the RV. It also may require the use of a portable de-humidifier to manage relative humidity within an acceptable range. This is discussed further in section 1.0.

If you have any questions about moisture-related issues in the environment you plan to use the RV in for a majority of the time, contact your manufacturer's representative.

5.0 Storage of Your RV

During those periods when your RV is not in use, care must be taken to ensure moisture sources are addressed. Ideal storage of your RV would be in an enclosed climate controlled environment. When this is not possible, the following steps should be taken to ensure moisture is controlled:

a. Turn off all water sources;
b. Turn off all combustion appliances;
c. Drain the water tank(s);
d. Drain the water heater;
e. Open all closets, cabinet doors and drawers;
f. Close all windows and entrance doors;
g. Open a vent or a window enough to allow for some limited ventilation air flow, but not so far as to allow snow or rain to enter;
h. When storing the RV in high humidity climates (ambient relative humidity is greater than 60% year round), add a dehumidifier drained to exterior to control humidity inside the RV during storage; and
i. Check your owner's manual for any additional recommendations.

6.0 Modifications to your RV

Consult your manufacturer for guidance prior to making any modifications to your RV. It is important that changes be completed by a qualified service firm to ensure moisture intrusion or accumulation problems do not occur.

7.0 Wet Areas

Areas that are exposed to water spills or leaks should be dried as soon as possible and definitely within 24-48 hours. Drying areas quickly minimizes the chance for moisture damage and possible mold growth, which can begin to form colonies in 48 hours. A variety of methods can be used to help the drying process:

NOTES:

- Remove excess water with an extraction vacuum
- Use a dehumidifier to aid drying
- Use portable fans to move air across the surface
- Because moisture is key to mold issues, treat all signs of condensation and spills seriously and deal with promptly. Failure to deal with a moisture issue promptly may cause more severe issues where none initially existed, or may make a small problem much worse.
- Learn to recognize signs of mold - don't paint over or cover up suspicious discoloration until you are sure it is not mold. The affected surface must first be cleaned and dried; residual staining may be painted;
- Be sure to understand and eliminate the source of moisture accumulation as a part of the clean-up. Otherwise, the same issues will simply reoccur; and
- Small amounts of mold should be cleaned as soon as it appears. Small areas of mold should be cleaned using a detergent/soapy solution or an appropriate household cleaner. Gloves should be worn during cleaning. The cleaned area should then be thoroughly dried. Dispose of any sponges or rags used to clean mold.

8.0 Additional Resources

If you are interested in more information on moisture management, here are some resources to review: A Brief Guide to Mold, Moisture, and Your Home, by the U.S. Environmental Protection Agency, Office of Air and Radiation Indoor Environments Division (6609 J) 1200 Pennsylvania Ave., NW, Washington, DC 20460 EPA Publication #402-K-02-003

- Moisture Problems in Manufactured Homes: Understanding Their Causes and Finding Solutions, by the Manufactured Housing Research Alliance, 2109 Broadway, Suite 200, New York, NY 10023. (212) 496-0900
- Mold in Residential Buildings, by the National Homebuilder's Association Toolbase Technote July 2001 c/o NAHB Research Center, 400 Prince George's Blvd, Upper Marlboro, MD 20774. 301-249-4000
- Mold Remediation in Schools and Commercial Buildings, by the U.S. Environmental Protection Agency, Office of Air and Radiation Indoor Environments Division (6609J) 1200 Pennsylvania Ave., NW, Washington, DC 20460 EPA Publication #402-K-01-001

SLEEPING

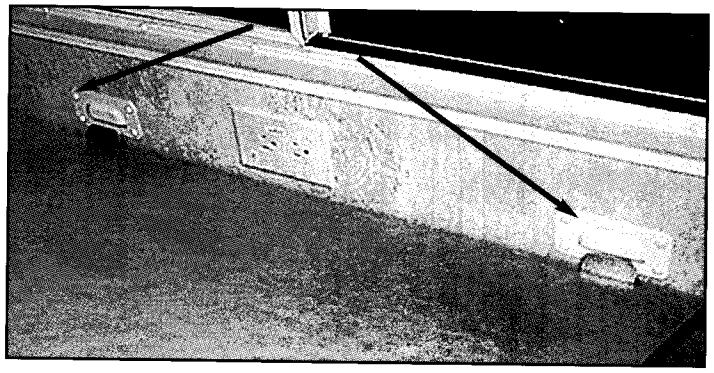
TABLES/BEDS

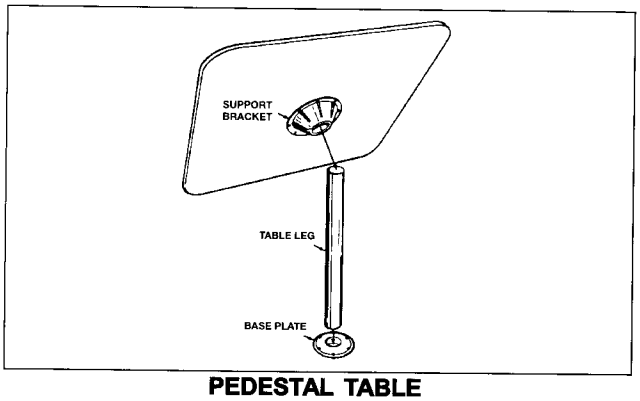
Listed below are general instructions for setting up the variety of tables and beds that may be found in your RV. Your dealer will be happy to demonstrate these items.

NOTES:

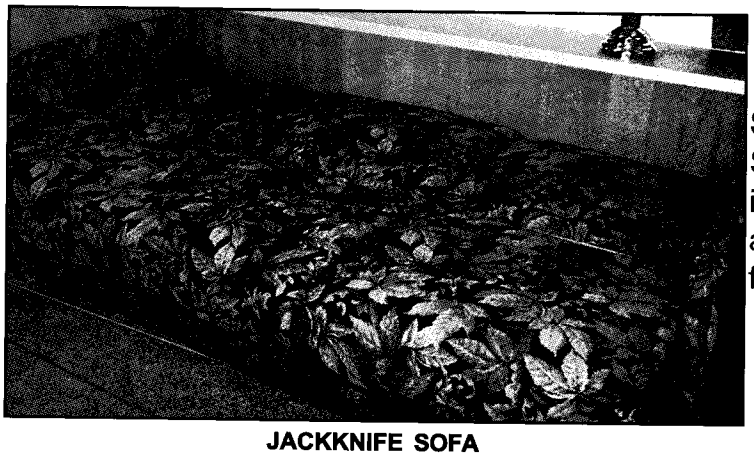
DINETTE BOOTH ASSEMBLY

To raise the table, pull the table toward you and up, then push it toward the wall. Insert tabs at the back of the table into the wall brackets. Pull the leg down and adjust to the proper height. To lower the table into the bed position, reverse the above operation.





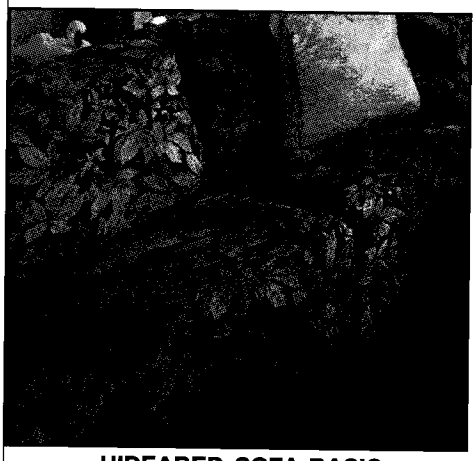
PEDESTAL TABLE



JACKKNIFE SOFA

SOFAS/BEDS

Several types of sofas are available, depending upon your floor plan. Most of the sofas also convert into a bed. Consult your dealer for proper instructions for the sofa in your unit.



HIDEABED SOFA BASIC

SOFA BED

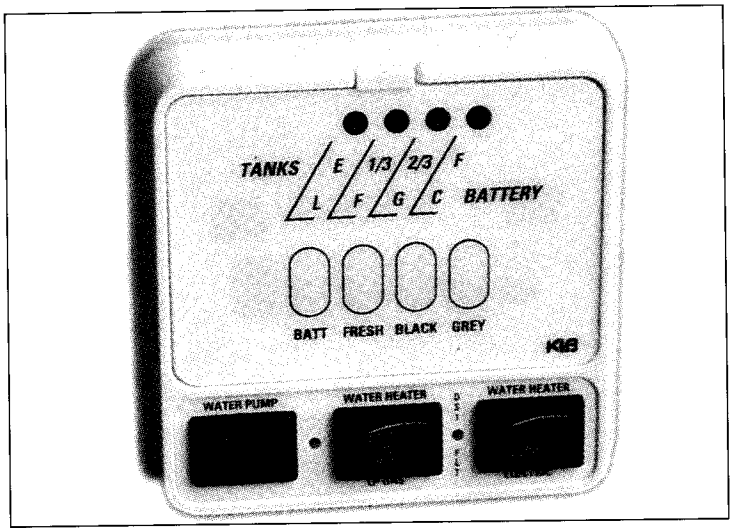
NOTES:

ELECTRICAL

This section will describe the four basic utility systems found in your RV. They are: Electrical, Fresh Water, Drainage/Sewer and LP Gas. The following will familiarize you with their function, operation and simple maintenance. If a problem should develop with any of the systems, contact your authorized dealer for service.

MONITOR PANEL

This panel allows you to check the condition of your RV battery and the volume of fresh, waste and gray water in your unit's holding tanks, the water pump and water heater switch.



Note: Some units may have additional tanks.

Note: The monitor panel illustrated is typical. The one in your unit may look and function diffrently. Your dealer will be happy to explain the operation of your monitor panel.

Battery Connection Levels

The battery condition will fall into one of the following levels

C CHARGED — more than 14.5 volts (unfiltered circuit or dead cells in battery).

G GOOD-12.6 to 14.49 volts.

F FAIR-12.0 to 12.5 volts

L LOW--5 to 11.9 volts

WARNING!!!

Disconnect the 120 Volt (shoreline cord) and disconnect the negative terminal from the battery before working on the electrical system. Failure to do so could result in severe burns, shock or electrocution.

NOTES:

Battery

The liquid level in the battery must be above the plates. It should be checked frequently (daily during heavy usage). The battery manufacturer recommends using a good grade of drinking water (not mineral water). The battery terminals should be kept free of dirt and corrosion. The charge level of the battery should be checked frequently. You may use a battery hydrometer to do this. When specific gravity is below 1.225, recharge the battery until the 1.265 level is indicated.

POWER DISTRIBUTION CHART

POWER CENTER and/or 12-VOLT BATTERY	120-VOLT ELECTRICAL
All interior lights	Power center
Porch light	All receptacles
Trunk lights Radio	Refrigerator Air conditioner(s)
Water pump	Microwave
Monitor panel	Washer/dryer
Range vent	Television
Power roof vent	VCR
Slide-Out Room	Stereo
Television (front & rear)	Water Heater
Television antenna	DVD
Water heater (electronic ignition,	
Furnace (electronic ignition)	
Grab handle (lighted)	
LP leak detector	
Refrigerator	

Data Port

"This vehicle may be equipped with one or more devices that record specific vehicle data. The type and amount of data recorded will vary depending on how the vehicle is equipped. Please refer to the owner's manual for your chassis for further information." refer to the owner's manual for your chassis for further information."

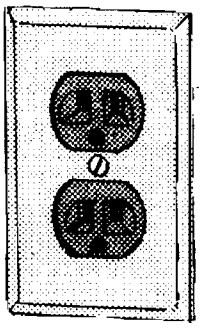
NOTES:

12 VOLT AND 120 VOLT SYSTEMS

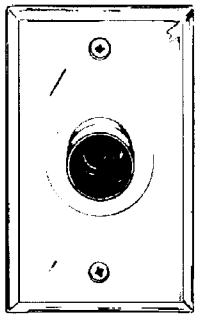
Your recreational vehicle contains two (2) separate electrical systems: one 12-volt direct current (DC) and one 120- volt alternating current (AC), similar to the one in homes. These systems provide you with power while you are camped or are traveling. The 120-volt system requires an external source of 120-volt electricity, usually a campsite or household receptacle or an auxiliary generator. The 12-volt electrical system is supplied by batteries, the power converter or the 12-volt source from the tow vehicle.

120 VOLT AND 12 VOLT RECEPTACLES

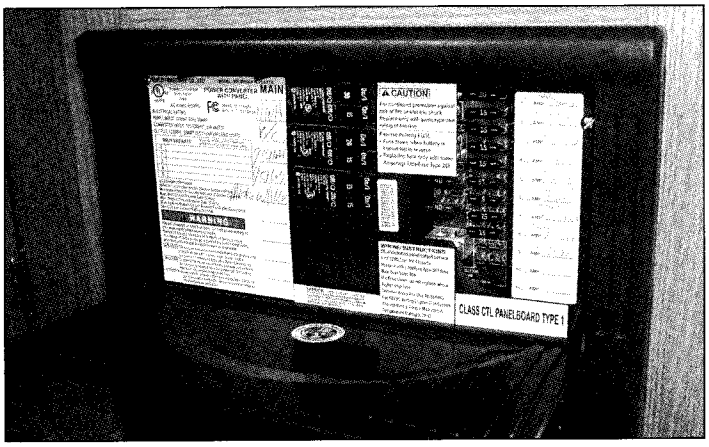
To reduce the 12-volt load on your RV batteries, the 120-volt system should be used whenever a 120-volt hook-up is available. Although most components in your unit (water pump, range hood light and fan, interior lights) operate only from a 12-volt source, the power converter changes 120-volt AC to 12-volt DC power.



120 VOLT



12 VOLT



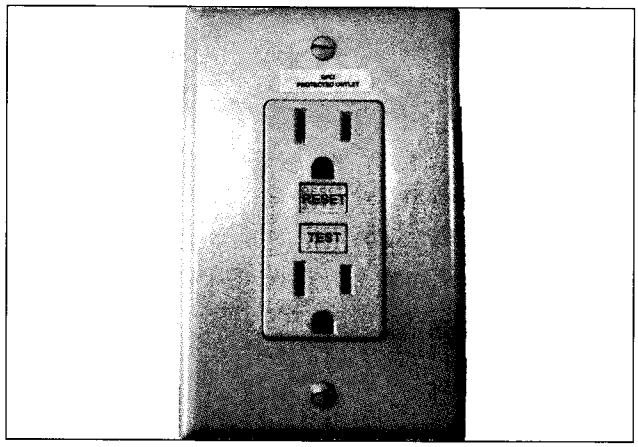
COMBINED POWER CENTER-CONVERTER

The 120-volt system supplies power for the following through the power center: refrigerator, exterior receptacles, interior receptacles (used to operate regular household appliances), and optional roof air conditioner. The converter provides 12-volt power for all of the unit's 12-volt components. When the external 120-volt power cord is used, the power is connected directly into the main electrical service panel of the power center and is distributed through circuit breakers.

GROUND FAULT INTERRUPTER/RECEPTACLE

The bath, kitchen and exterior receptacles are protected by a ground fault interrupter (GFI). The GFI is built into the bath and kitchen receptacles, and connected to the outside receptacle. It protects against severe electrical shock, if a ground fault occurs in that circuit. The GFI will not trip due to an over current condition. The GFI senses the fault and breaks the bath, kitchen and exterior receptacle circuits. If this should happen, unplug all appliances on that circuit and reset the breaker in the bath or kitchen receptacle.

NOTES:



GFI (GROUND FAULT INTERRUPTER) RECEPTACLE
The GFI system should be tested at least once a month. To test the GFI system, plug a test light into the outlet and push the "Test" button on the receptacle. The test light should go out. To restore power, push the "Reset" button. If the button does NOT pop out or if the test light indicates a live circuit, **DO NOT** use the outlets. Contact your dealer.

SHORELINE CONNECTION

The shoreline is a heavy-duty cable with a 3-prong grounding plug on one end, permanently attached at the other end, and connected to the power center. It can be pulled from its storage compartment through a hatch in the sidewall of your vehicle and connected to a matching receptacle. Some campsites and trailer parks still have two-slot outlets. If it is necessary to use a 3-to-2 adapter, be certain its' grounding wire is fastened securely to the outlet grounding screw.

If your unit is equipped with two air conditioners, wiring for a second air conditioner, or a combination washer/dryer, you will have a 50 amp service with a heavy-duty cable and a 4-prong plug. If it is necessary to adapt from the 50 amp plug to a 30 amp receptacle, you will not able to operate these options.

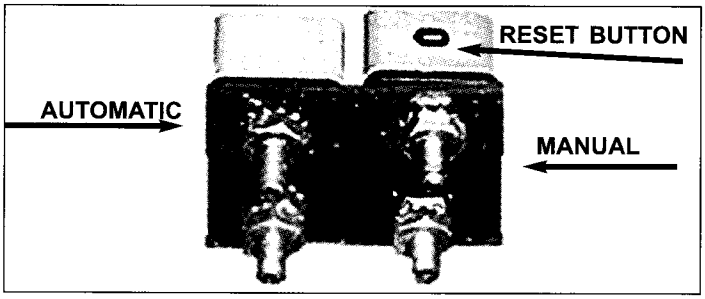
⚠ WARNING!!!

Do not replace a fuse with one of a higher amp rating.

The 120-volt system is protected by the circuit breakers. If a circuit breaker opens, unplug the appliance(s) on that circuit, allow a short period for the breaker to cool, and reset the breaker. If the breaker continues to open, it may be caused by an appliance you have added or a fault in the electrical system. If you determine it may be a fault in the electrical system contact your dealer.

12-VOLT SYSTEM

The 12-volt system, includes the automotive battery and the RV battery, plus the 12-volt converter. To use the automotive battery the electrical pigtail must be attached to your tow vehicle. This provides power to the exterior lights and brakes in addition to all inside 12-volt appliances.



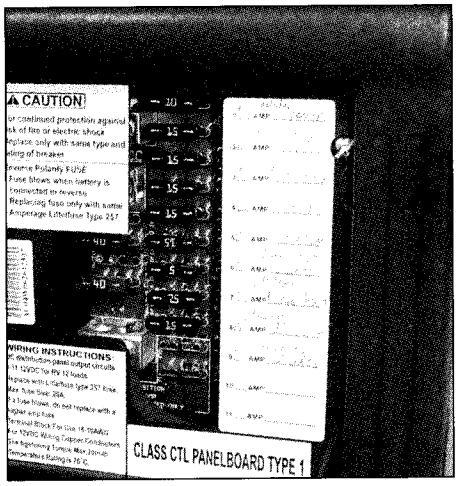
AUTOMATIC AND MANUAL CIRCUIT BREAKER

NOTES:

The RV battery and/or 12-volt converter provide power to all inside appliances (lights, range hood, furnace blower, water pump, 12-volt receptacles, porch light, monitor panel and refrigerator). The shoreline must be attached to run the converter.

The automotive alternator will charge the RV battery when the pigtail is attached. When the shoreline is attached, the RV battery will be charged by the 12-volt converter.
The pigtail should be disconnected from the tow vehicle when the RV battery is in use. To check the battery using the monitor panel, disconnect the shoreline and turn on at least three interior lights. (A discharged battery will show full charge unless electricity is being drawn.)

CONVERTER
The power converter section of the power center transforms 120-volt AC into 12-volt DC to supply power to all of the 12-volt systems. Each 12-volt circuit is protected by a fuse in the power center. Turn the twist lock to open the door and check the fuses. A listing of the circuits is on the inside of the door. Some fuses protect circuits with more than one function; others may be for specific appliances.



12 VOLT FUSE BLOCK
If a fuse is blown, turn off or unplug all appliances on the circuit controlled by the blown fuse. Replace the blown fuse with a fuse of the same ampere rating. If the fuse continues to blow, notify your dealer. See the power center manufacturer's owner/user manual for specifications, operation and testing procedures.

WATER SYSTEMS

FRESH WATER SYSTEM
Fresh water for your unit is supplied either by the vehicle's fresh water tank or by an external pressurized source (city water).

Troubleshooting the Fresh Water System
The water heater is an LP gas appliance that heats water to a preset temperature. To fill the water heater, simply turn on a hot water faucet When water flows steadily, turn the faucet off.

NOTES:

There are two common reasons the Fresh Water System may fail. The first is a problem within the system itself; a hose, valve, coupling road vibration effects, etc. The second most common cause of system failure is neglect. Improper winterization, dirty filters, insufficient battery power and failure to perform proper maintenance will affect how your system operates. Most water system problems can be avoided by conscientious attention to these important details.

If your unit is not equipped with an inline pressure regulator, we recommend you install one. Since water pressures vary depending on the source, this will protect your water system and your supply hose from excessively high water pressure.

Leaks

Leaks most often occur at a fitting. Vibration while traveling can cause fittings to loosen and impure water can cause hoses or valves to become clogged. Tighten fittings, taking care not to over tighten. If a leak continues to be a problem, check for clogs in hoses or lines and be sure the tank drains are securely closed.

Proper winterization is a very important part of leak prevention section on **WINTERIZATION** for additional information.

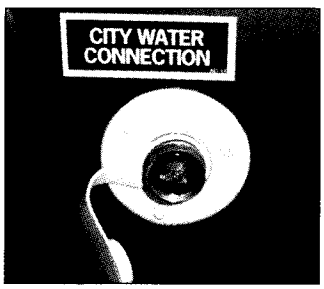
City Water

When using the city water hookup, the water tank and pump are bypassed. You cannot fill the water tank through the city water inlet. Connect a hose to a "city pressurized" water faucet and to the RV's fresh water inlet. Although a common garden hose can be used to fill the water tank and connect to city water, long-time RV'ers recommend a hose specifically manufactured for this, available at your dealer.

Note: In areas where city water pressure exceeds 60 psi, a pressure regulator should be used. Excessive water pressure may damage lines and connections. See your authorized dealer for more details.

The water tank should be sanitized before you use it for the first time, after a period of non-use, and whenever you suspect the tank has been contaminated. To sanitize your water tank, first empty the tank and then use the following procedures:

GRAVITY WATER FILL



CITY WATER FILL

NOTES:

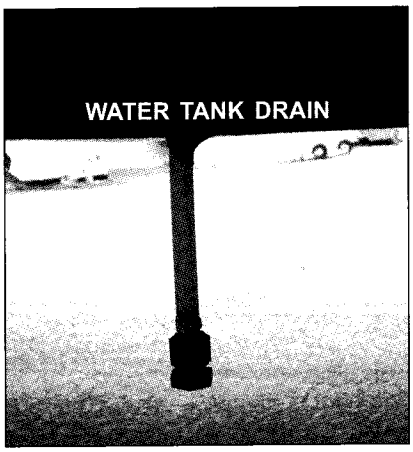
1. Pour 2-1/2 cups of liquid household bleach along with approximately 10 gallons of water into the fresh water tank.

2. Turn the vehicle's water pump on. Open the hot water faucet until water begins to flow. Turn off hot water and repeat with the cold. Wait three hours.

3. Open faucet's, line drains, water tank and water heater drains. Some solution will remain in the water heater.

4. Fill the water tank to the 1/2 level. Turn on the water pump and open all faucet's. Let the water run until the system is empty. Connect a hose to the city water fill. Turn on all faucet's and let the water flow for about five minutes.

5. If a chlorine taste lingers, flush the system with a vinegar and water solution (one quart of vinegar to five gallons water). Wait two to three hours and flush with fresh water.



WATER TANK DRAINS
The water tank drains are located underneath the unit.

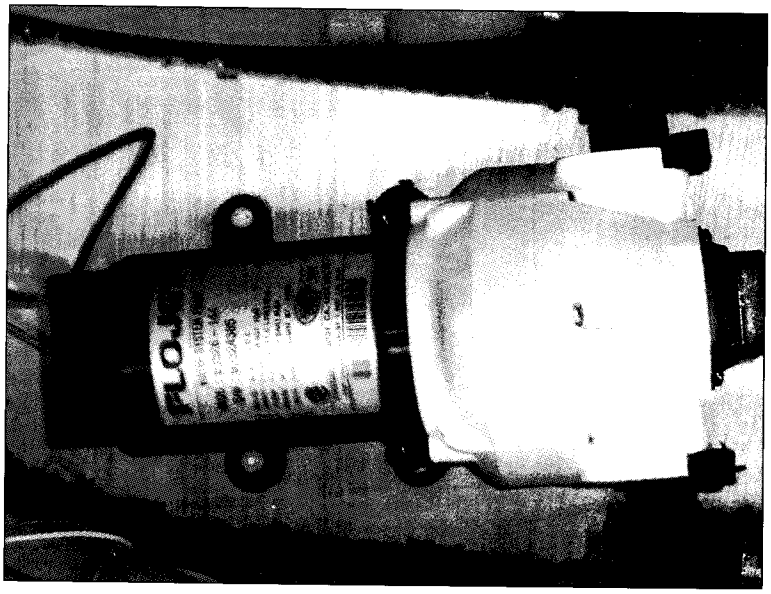
WATER PUMP
The water pump is a 12-volt DC appliance that is activated by a switch on the monitor panel mounted in the kitchen area. (On some models a second switch may be located in the bathroom). The switch can be left on while camping. When you want water, simply open a faucet. The pump which supplies water from the fresh water tank will run only as long as is needed.

Troubleshooting the Water Pump

- If the pump fails to start when the switch is on, check the fuse located in the converter.
- If the pump continues to operate whether the faucet's are opened or closed, check the water tank.
- If the pump runs sporadically; the tank may be empty or there might be a leak in the system.
- If water pressure is low, check the filter.

a. Loosen the clamp at the inlet end of the filter
b. Remove water line from filter
c. Unscrew filter from pump
d. Turn and pull apart each end of the filter
e. Clean screen
f. Reinstall filter and check operation

NOTES:



WATER PUMP (TYPICAL)

Note: If the city water is connected, the pump is not required and should be turned off.

Shower

If your shower faucet has a diverter, as a safety measure it will be equipped with an anti-siphon devise. This devise is built into the faucet and if a vacuum should occur, it will prevent backflow of grey water into fresh water. This feature will reduce the possibility of contamination of the fresh water supply.

Care of Sinks/Shower

Do not use any type of abrasive cleaner or one that contains acid or lye on your sinks, shower or fixtures. Any type of mild cleaner is sufficient and remember to rinse well.
If you have a stainless steel sink, you may clean it with stainless steel cleaner available at most grocery stores or any non-abrasive cleaner. You may also use any type of ABS cleaner which is available from your authorized dealer.

Drainage /Sewer System

Your RV is equipped with a drainage sewer system that functions much the same as the one in your home. In most units, this system includes drain lines from the kitchen sinks, lavatory, tub/shower and marine type toilet to a gray-water holding tank and/or a sewage holding tank.

The drainage system also includes vents that carry odors (caused by drain water and waste) out through the roof. The drainage system vents also equalize the air pressure, which is necessary to maintain a water barrier against odors in the P-traps and to ensure smooth flow and escape for your drainage system.

Toilet

Flush the toilet before initial use and after emptying the holding tank. This will help to prevent collection of solids.

To help control odors, there are a number of toilet and holding tank treatment concentrates on the market. These chemical concentrates are available at your dealer.

NOTES:

The following illustrations show four different toilet models used in RVs To operate Toilet A, step on the small pedal to add water to the bowl.

When cleaning your toilet, do not use highly concentrated or highly acidic household cleaners (no scouring powder).

If you have a toilet with a slide valve and the valve does not move freely, apply silicone spray for ease of operation.

TYPICAL TYPES OF RV TOILETS

To ensure proper operation and maintenance, refer to your toilet manufacturer's operating manual.

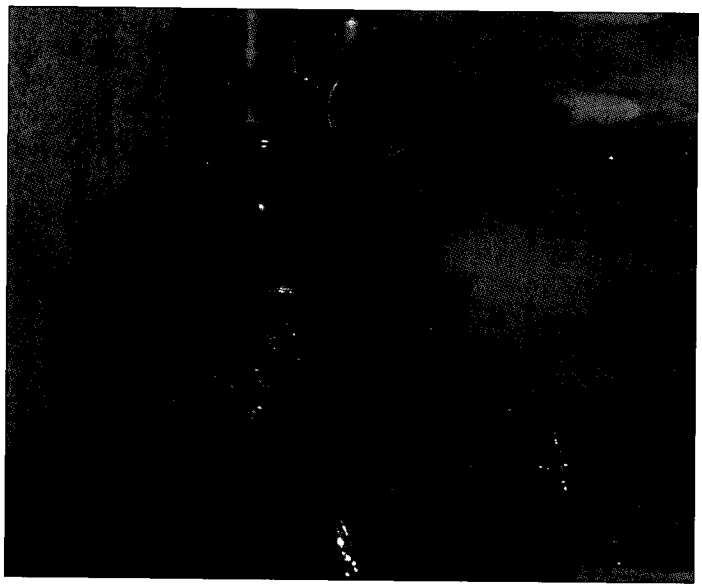
HOLDING TANKS

Most unit drainage/sewer systems have two holding tanks: Gray Water and Waste (black) Water. The gray water holding tank collects water from the kitchen sink, lavatory and tub/shower. The waste (black) water holding tank is used to collect waste from the toilet. Coachmen offers Waste Tank Flush Systems.

To prevent unnecessary accumulation of solids in the waste holding tank, do not put facial tissues or similar products into the toilet. It is highly recommended that you use only bio-degradable toilet tissue available from your RV dealer.

Holding tanks should be emptied frequently into a specified dumping station. Most campgrounds have dumping stations, often at each campsite, and many service stations and highway rest areas have waste dumping stations also. Before emptying the holding tanks, make sure your vehicle is level; emptying and holding tanks depends on gravity.

To empty the holding tank, remove the sewage drain hose from its storage area. Remove the cap from the termination outlet and connect the sewage drain hose.



DRAIN CLEAN-OUT

Do not use harsh drain cleaner chemicals or solvents in the drains. Drain cleanouts are installed on certain units at intervals to facilitate drain line cleaning or unclogging. Use a wrench to remove and replace drain cleanout plug.

While you are camped you may leave the gray water dump valve open only if the hose is connected and your campsite has a sewage hookup. Do not open the waste water dump valve until you want to empty the holding tank. If the waste water dump valve is left open, the rinse and flush water will run off and solids will be left to collect and harden in the bottom of the tank.

To drain a holding tank, pull out the dump valve slide handle. On some units it is necessary to unfasten a locking device before the slide valve handle can be pulled out. After the tank is drained, close the valve (if applicable, lock in place).

After emptying the waste holding tank, flush or pour about two gallons of water through the toilet and drain again. This flushes the tank and helps clean the drain hose. Repeat as necessary.

To empty the gray water holding tank, follow the same procedure used to empty the waste holding tank. A flushing may not be necessary. When the tank is empty push the dump valve handle in until it seats (if applicable, lock in place). Remove the hose, wash it and return it to its storage holder. Replace the termination cap securely.

If your model is equipped with an outside shower this may be used to rinse out the inside of your sewer hose before leaving the dump facility.It is recommended that you always drain the sewage waste holding tank first, and then the gray water tank. This assists in flushing and cleaning the termination valve and drain hose.

LP GAS SYSTEM

The liquefied petroleum (LP) gas system in your unit furnishes fuel for hot water, heat, cooking and refrigeration (see illustration).

NOTES:

LP GAS SYSTEM (TYPICAL)

LP gas provides a portable, efficient and inexpensive source of energy. It is sorted in a LP gas bottle(s) on the "A" frame of travel trailers or inside a compartment on fifth wheel trailers.

Under pressure in the tank, the LP gas turns to vapor; it is the latter that burns. Each tank has a manual 80 percent stop-fill valve that allows space in the tank for vapor expansion.

The high pressure of the vapor in the tank is reduced in two stages through a regulator. The tank pressure will vary with temperature and altitude, but may be reduced to about 12 psi in the first stage, then to about 6-1/4 ounces in the second stage (the 6-1/4 ounces per square inch also is expressed as 11 inches of water column).

Call your Coachmen dealer or a authorized repair center with any questions regarding your LP system.

WARNING !!! WARNING !!! WARNING !!!
When refilling your tanks, be sure to use propane ONLY.
DO NOT use butane or butane mixtures.
WARNING !!! WARNING !!! WARNING !!!

The LP gas system is designed and built to meet rigid standards, and it is tested before it leaves the factory. Your dealer also tests the system before it is delivered to you. Always take your vehicle to an authorized dealer for LP gas problems. Always have an authorized LP gas supplier fill your LP gas tanks. Be sure you use only liquid petroleum fuel in your LP tank. Do not use butane or a butane mixture. Check with your LP gas supplier to be sure you are getting a pure quality LP gas.

LP gas burns readily and with intense heat. With proper care and maintenance, it is safe and efficient. There are, however, certain characteristics about LP gas you should know.

- LP gas settles into any closed area, it displaces air and could cause suffocation if not detected.
- It also could create a fire or explosion hazard.
- In it's natural state, LP gas is odorless. An additive gives it a distinctive mustard odor so that leaks can be readily detected. Under certain circumstances you may not be able to detect LP gas by smell.

NOTES:

For that reason, your vehicle is equipped with an LP leak detector which will provide an audible warning if a propane leak is detected.

NEVER DISABLE OR BYPASS THIS CRITICAL SAFETY DEVICE

WARNING !!! WARNING !!! WARNING !!!

1. Extinguish any open flames, pilot lights, and all smoking material.
2. Do not touch electrical switches
3. Shut off the gas supply at the tank. Close valve(s) or gas supply connections.
4. Open doors and other non-electrical ventilating openings.
5. Leave the area until the odor clears
6. Immediately call your gas supplier and have the gas system checked and leakage source corrected before using again.

WARNING !!! WARNING !!! WARNING !!!

Note: Before using any LP Gas Appliance, read the LP Gas manufacturer's operating instruction manual.

WARNING!!!

LP Gas containers are equipped with safety devices that relieve excessive pressure by discharging gas into the atmosphere. **DO NOT** place or store LP containers inside the living area of a vehicle.

It is recommended that you use only propane gas. The names of LP suppliers can be found in the Yellow Pages of your telephone directory under "Gas-Liquefied Petroleum-Bottled and Bulk." Many campgrounds now have LP fill facilities, as do some service stations.

WARNING!!!

USE ONLY PURE LP GAS IN THE LP TANK. DO NOT USE BUTANE OR BUTANE MIXTURE.

It is recommended that you use only propane gas. The names of LP suppliers can be found in the Yellow Pages of your telephone directory under "Gas-Liquefied Petroleum-Bottled and Bulk." Many campgrounds now have LP fill facilities, as do some service stations.

OPERATING YOUR LP GAS APPLIANCES

To operate any LP gas appliance, the LP gas SERVICE valve must be open. When first used, or after a refill, there may be some air in the gas lines that will escape when you first open a range burner or similar LP gas valve. The air may extinguish your match or igniter the first time or two before you get ignition.

NOTES:

Remember too, that when you close the tank's SERVICE valve some of the gas will remain in the lines. To completely bleed the lines of gas, close the tank's SERVICE valve and light a range burner to use up the excess. When the flame burns out, turn the range burner off.

CLIMATE DIFFERENCES

An appliance will not function if the LP gas does not vaporize. Propane continues to vaporize down to -44 degrees F. Liquid gas does not vaporize as rapidly in cold weather, so you may place too great a demand on your tanks' capacities in certain conditions. This can cause a refrigeration effect resulting in frosting of the tank and regulator.

Check with your dealer or LP gas supplier regarding how your appliance demands may be met by your tank at various temperatures.

LP APPLIANCE OPERATION

To operate any LP gas appliance, the LP SERVICE valve, (located on the LP tank) must be open. After first use or a refill, there may be some air in the gas lines that will escape when you first open a range burner or similar LP gas valve. The air may extinguish your match or igniter. Continue lighting process until all air is out of tank and you have ignition.

Remember too, that after closing the tank's SERVICE valve, some gas will remain in the lines. To completely bleed the lines of gas, close the tank's SERVICE valve and light a range burner to use any excess gas left in the times. When the flame burns out, turn the range burner off.

REGULATOR PRESSURE

Check the LP gas regulator at the beginning of each season or whenever a problem is indicated. Correct line pressure is 11 inches of water column. Your dealer or LP gas supplier can perform this check.LP gas regulators must always be installed with the diaphragm vent facing down.

Regulators that are not in compartments have been equipped with a protective cover. Make sure that the regulator vent faces down and that the cover is kept in place. This will minimize vent blockage that could result in excessive gas pressure and could cause a fire or explosion.

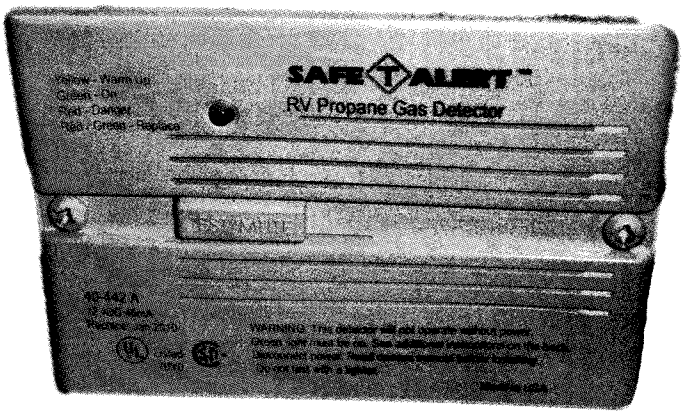
LP LEAK DETECTOR

The LP leak detector in your RV should be in the ON position whenever you are using your RV. The most important feature is an early warning alarm and a malfunction indicator.

If gas concentrations reach a level of only 1/4 the danger level, audio alarms and visual flashings are activated. There are periodic tests to perform to insure safety.

Please be sure to read the manufacturer's instructions for maintenance and trouble shooting guides.

NOTES:



LP PROPANE DETECTOR (TYPICAL)

Note: The system should be turned off when the RV is in storage or will be unused for several days.

Note: Do not spray any cleaning fluids near the detector.

Note: If the indicator light is not on, check the in-line fuse behind the detector.

REGULATOR/CHANGE OVER

Each pair of LP gas bottles will have a regulator. Double 20 lb. bottles may have a manual changeover valve; double 30 lb. bottles may have an automatic changeover valve. With the manual valve, open only one bottle's service valve. When the bottle is empty, close that service valve and open the service valve of the other bottle.

For units with the automatic changeover valve, open the Service valves on both bottles. The bottle to which the arrow in the changeover knob points is the one in service.

As long as there is fuel in the bottle, the FULL-EMPTY indicator on top of the regulator will show white. When the bottle is empty, the automatic regulator will begin using fuel from the "reserve" bottle. When this happens, the FULL-EMPTY indicator will change from white to red.

At this point, the empty bottle should be shut off and the indicator knob turned so that the arrow points to the bottle in service. The FULL-EMPTY indicator again will show white. The empty bottle may now be disconnected for refilling.

Check the indicator flag regularly to avoid running completely out of fuel. You can also check the volume of LP gas by weighing the bottle, comparing the known weight of an empty and a filled bottle. The TARE (empty) weight is stamped on the LP gas bottle handle.

LP GAS LINE CHECK

Regular maintenance of the LP gas system is extremely important to insure the systems safety.

All checks and/or repairs should be performed by an authorized service agency who is trained in dealing with RV LP gas systems.

NOTES:

DO NOT attempt repairs yourself. The system should be checked at least once every 30 days of use or 5,000 miles of travel. If you are using your vehicle in rough terrain or traveling over rough roads these inspections should be done more frequently.

If you check connections for leaks yourself:
DO NOT use open flame or matches to check LP gas line connection.
Use only an approved leak detector solution.

DO NOT use products that contain ammonia or chlorine (most common household soaps). If you detect a leak, shut off the gas and contact either your dealer or the nearest authorized LP gas dealer to have repairs made.

Note: If you have questions about your LP system, refer to an authorized Coachmen dealer or a licensed/certified LP repair facility.

1. DO NOT FILL BOTTLE BEYOND THE LEGAL LIQUID LEVEL CAPACITY.

2. NEVER USE A WRENCH OR PLIERS TO CLOSE TO THE SERVICE VALVE. THESE VALVES ARE DESIGNED TO BE CLOSED LEAK-TIGHT BY HAND. IF WRENCHES ARE NECESSARY TO STOP A LEAK, THE VALVE SHOULD BE REPLACED.

3. MAKE PERIODIC CHECKS FOR LEAKS IN THE BOTTLE AND LINE CONNECTIONS. VIBRATIONS DURING TRAVEL MAY CAUSE LEAKS. USE A PROPANE GAS LEAK DETECTOR SOLUTION TO MAKE THESE CHECKS.

4. BE SURE TO FASTEN YOUR BOTTLE(S) SECURELY IN PLACE.

5. TURN THE BOTTLE(S) SO THE OPEN PART OF THE GUARD IS FACING THE TRAILER. THIS WILL PROTECT THE VALVE AND REGULATOR FROM FLYING ROCKS OR MUD.

6. TRANSPORT YOUR BOTTLE(S) IN THE SAME POSITION AS IT IS USED NORMALLY. BE SURE THE VALVE IS CLOSED. DO THIS WHETHER YOU REMOVE YOUR BOTTLE(S) FOR TRANSPORT OR FOR A REFILL. ALWAYS SECURE THE BOTTLE(S) TO AVOID FALLING OR ROLLING.

7. PRACTICE SAFETY AT ALL TIMES. LP GAS CAN BE DANGEROUS. IF YOU HAVE ANY QUESTIONS ABOUT THE OPERATION OF YOUR GAS APPLIANCES OR THE LP GAS SYSTEM, CONTACT YOUR LOCAL LP GAS DEALER.

Note: If your unit is equipped with a horizontal LP gas tank, the tank must be filled in that position.

WARNING!!!
DO NOT modify your LP Gas System.

WARNING!!!
DO NOT remove components or replace with components which are not of equal value.

WARNING!!!
DO NOT fill container(s) to more than 80% of capacity. Over filling the container can result in uncontrolled gas flow which can cause fire or explosion.

WARNING!!! WARNING!!! WARNING!!!
DO NOT FILL CONTAINER(S) TO MORE THAN 80% OF CAPACITY.
Over-filling the LP gas container can result in an uncontrolled gas flow which can cause fire or explosion. A properly filled container will contain approximately 80% of its volume as liquid LP gas. If the tank is over-filled, have the LP gas dealer bleed out the excess. DO NOT smoke, strike a match, or ignite a lighter when the LP gas container is being filled. A spark or flame could ignite fumes. Be certain all burner and pilot flames are out and Service Valve is closed when filling your vehicle's LP gas or fuel tanks.

APPLIANCES AND ACCESSORIES

RANGE/OVEN

Your recreational vehicle has a three burner range; it may have an oven beneath the range, and it may have a gravity range hood with a light, a power range hood with fan and light, or a range hood with fan only. The range burners and oven are LP gas appliances.

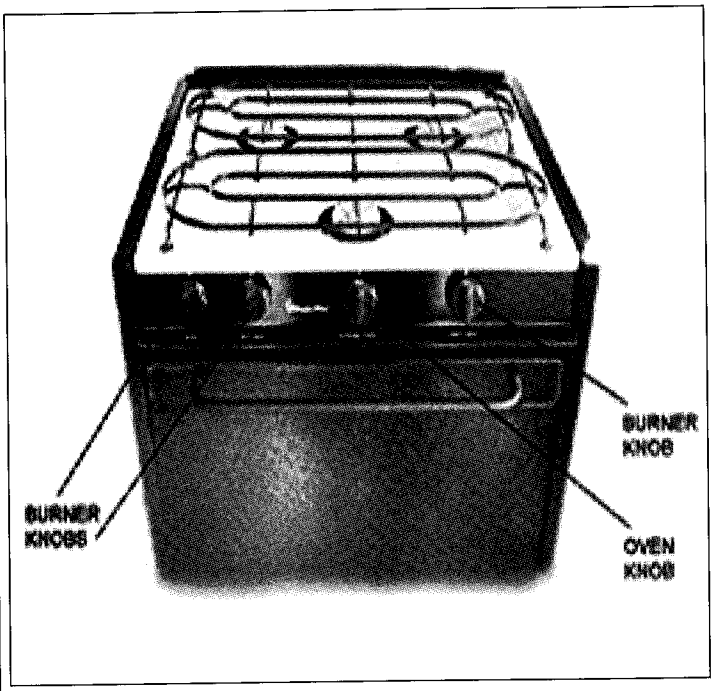
Read the range manufacturer's manual carefully for complete details on the operation and care of the range, range hood and oven.

Lighting the Oven Pilot

To light the oven pilot, be certain the LP gas container Service valve is OPEN, then depress and turn the oven control knob to PILOTS ON. Open the oven door and hold a lighted match next to the constant pilot area (it is near the rear of the oven compartment, just below the main oven burner). Relight the pilot if air in the line extinguishes the flame. When the pilot remains lit, adjust the oven control knob to the desired temperature.

Note: The oven control knob must be in the PILOTS ON position for the pilot to be lit. Once lit, the pilot will continue to burn.

NOTES:



THREE BURNER RANGE WITH OVEN

WARNING!!!

DO NOT use cooking appliances for comfort heating.

WARNING !!! WARNING!!! WARNING!!!
Before operating your oven or range, do the following:
1. Open overhead vent or turn on exhaust fan.
2. Open window.

Cooking appliances need fresh air for safe operation.

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

This warning is to remind you to provide an adequate supply of fresh air for combustion. 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 as the danger of asphyxiation is greater when the appliance is used for long periods of time.

FAILURE TO FOLLOW THIS WARNING CAN RESULT IN EXPLOSION OR FIRE WHICH COULD CAUSE INJURY OR DEATH.
FAILURE TO FOLLOW THIS WARNING WILL VOID ANY VEHICLE WARRANTY.

Lighting the Range

Be certain that the LP gas Service valve is OPEN. Light a match and hold it close to the range burner making sure you are lighting the valve you turned on. Turn the burner's control knob to full ON. Air in the line may cause a blowing noise and may extinguish the match. When the line is free of air, the burner will light readily. Adjust the burner flame with the control knob.

Care of Range and Oven

Allow the range top to cool, then clean it with hot, soapy water. Use a damp cloth to clean chrome surfaces. Grease splatters, which may bake onto the surfaces, should be wiped off before they have time to harden. Use chrome polish to remove stubborn stains. Clean the oven with commercial cleaner after each trip, or as necessary. DO NOT apply cleaner to aluminum gas tubing, thermostat sensing bulb or electrical components.

NOTES:

Broiler

For broiler use. if so equipped, light the oven and set the control knob to BROIL. Place the broiler pan (optional equipment) in the area below the oven burner. Do not place meat too close to the flame; grease or fat may ignite. Use foil only as recommended. Never cover the holes in the broiler pan or the air openings in the oven bottom with foil.

Always remove the broiler pan as soon as you have finished broiling. If the pan is not removed and the oven is used, the grease may bake onto the surfaces or the grease may ignite.

MICROWAVE OVEN

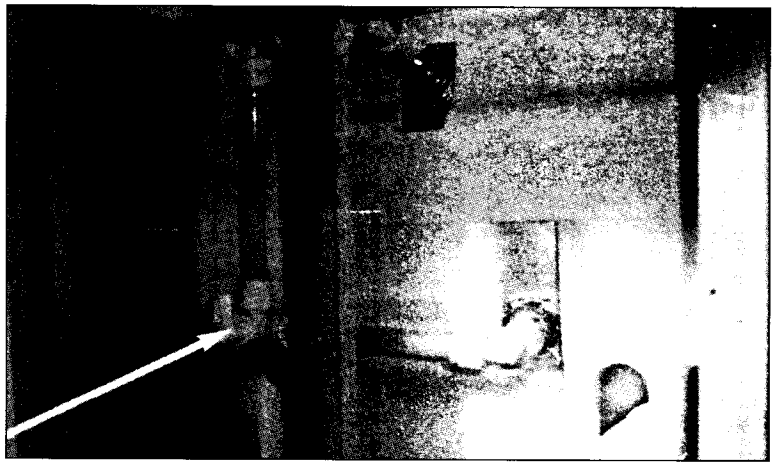
The microwave oven is a 120-volt appliance used to cook, defrost or simmer foods in less time than other cooking methods. Several types of microwave ovens are installed by the manufacturer. Be certain to read carefully the oven manufacturer's owner's manual for specific instructions for the model which may be installed in your unit.

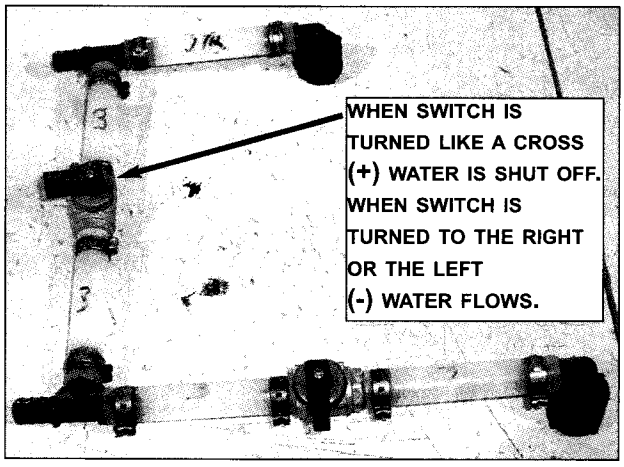
WATER HEATER

Your water heater is an LP gas appliance capable of heating gallons of water to a preset temperature. When the system is connected to city water, fill the water heater by opening a hot water faucet. When filling the fresh water tank, turn the water pump ON and open a hot water faucet. In either case, when water flows steadily, turn the faucet OFF.

Water Heater Bypass

There is a water heater by-pass system installed in the water lines at the back of the water heater. It allows you to use the water system without the water heater, as well as winterize the water system without having to fill the water heater with anti-freeze. For normal operation, close the center valve and open the outside valves. To by-pass the water heater, open the center valve and close the outside valves.



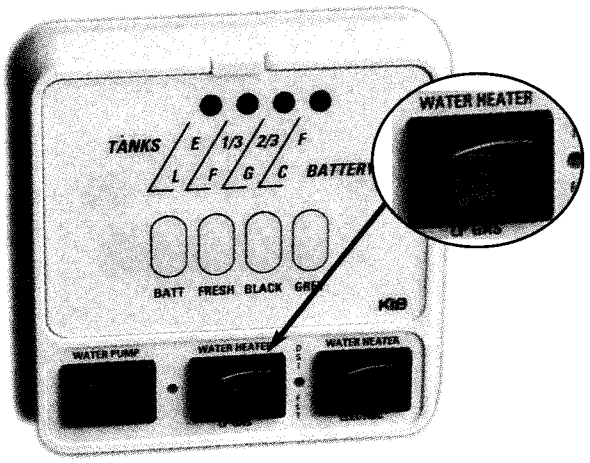


WATER HEATER VALVE POSITIONS

NOTES:

Water Heater Electronic Ignition

Place the remote water heater switch in the ON position. This switch is located in the lower right corner of the display panel. If the red fault light comes on, place the switch in OFF position and wait 5 minutes. The red fault light will only come on in the event of water heater malfunction or if the flame fails to light. After the required delay, again place switch in ON position. If the water heater turns on a green light will show on the display panel. It may take more than one start attempt when the water heater is being used for the first time or after the LP gas bottle has been refilled. To turn the water heater completely off place the switch in OFF position.



REMOTE WATER HEATER SWITCH

Draining

The water heater has a drain plug or drain cock in the water heater which must be opened or removed to drain the water heater tank. To facilitate drainage, open all hot water faucet's. When water ceases to drain, replace plug. Because of the location of the drain plug, about two quarts of water will remain in the bottom of the tank. This can be flushed as described in CARE OF WATER HEATER.

Care of Water Heater

Be certain the exterior compartment is clean and does not contain combustible materials. Never obstruct the relief valve or exhaust vent Periodically drain and flush the water heater tank.

To flush the tank, connect a hose to the city water fill. Remove the drain plug from the water heater tank. Run water for several minutes to flush tank. Turn water off and reinstall drain plug.

Burner Adjustment

Refer to Water Heater Operation Manual.

WARNING !!!

DO NOT USE PORTABLE FUEL-BURNING HEATING APPLIANCES, INCLUDING KEROSENE HEATERS, WOOD AND CHARCOAL GRILLS AND STOVES, IN YOUR RV. SUCH APPLIANCES PRODUCE EXCESSIVE MOISTURE, CONSUME OXYGEN AND MAY EMIT DANGEROUS PRODUCTS OF COMBUSTION.

NOTES:

WARNING!!! WARNING!!! WARNING!!!

HYDROGEN GAS CAN BE PRODUCED IN A HOT WATER SYSTEM SERVED BY A HEATER THAT HAS NOT BEEN USED FOR A LONG PERIOD OF TIME (GENERALLY TWO WEEKS OR MORE).

HYDROGEN GAS IS EXTREMELY FLAMMABLE.

TO REDUCE THE RISK OF INJURY UNDER THESE CONDITIONS, IT IS RECOMMENDED THAT THE HOT WATER FAUCET BE OPENED FOR SEVERAL MINUTES AT THE KITCHEN SINK BEFORE USING ANY ELECTRICAL APPLIANCE. IF HYDROGEN IS PRESENT, THERE SHOULD BE AN UNUSUAL SOUND SUCH AS AIR ESCAPING THROUGH THE PIPE AS THE WATER BEGINS TO FLOW. THERE SHOULD BE NO SMOKING OR OPEN FLAME NEAR THE FAUCET AT THE TIME IT IS OPEN. CONTACT YOUR DEALER OR THE SERVICE DEPARTMENT AT THE ADDRESS ON THE MANUFACTURER'S WARRANTY IF YOU ARE NOT CERTAIN OF WHAT ACTION YOU SHOULD TAKE.

FURNACE

The furnace is an automatic ignition type, controlled by a wall thermostat. Heat is delivered through a duct system.

Note: Although the furnace's fuel source is LP gas, the power operates on 12-volt electricity. The furnace requires a minimum of 9 volts to operate.

Ignition

Before lighting a furnace, be sure the LP gas bottle Service valve is OPEN and the thermostat ON/OFF switch is ON.

Automatic Models

Set thermostat to desired temperature and turn ON/OFF switch to ON. An automatic relay in your furnace provides a time delay. Therefore, when you turn up the thermostat there will be a pause prior to startup of the blower. At blower startup, your furnace air will enter your living quarters at room temperature.

Your furnace will start warming quickly and continue getting warmer for the next several minutes. If your motorhome is cold throughout, it may take from one to several hours to heat all interior walls, ceilings, floors and fixtures to a comfortable temperature. Once reached, your furnace will automatically maintain steady warmth.

On initial lighting, the burner may not ignite due to air in the gas lines. If this occurs, set the thermostat back to the lowest setting and wait 30 seconds; then reset thermostat to the desired temperature.

NOTES:

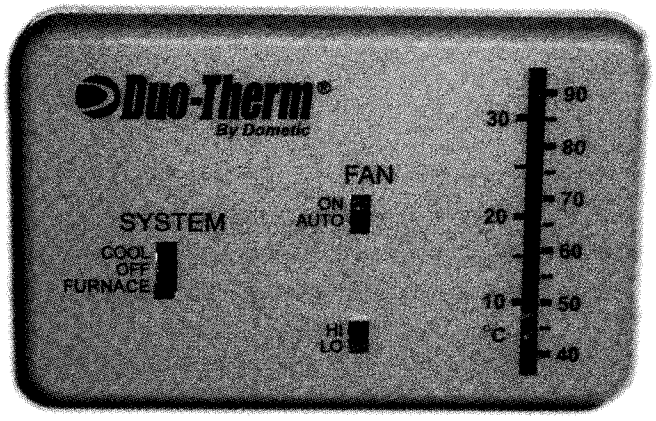
WARNING!!!
DO NOT ATTEMPT TO REPAIR OR ADJUST THE FURNACE YOURSELF. CONTACT AN AUTHORIZED DEALER OR SERVICE CENTER.

Note: If the furnace does not light after several attempts, while allowing each time for any delay pause, turn the thermostat OFF and contact your authorized dealer or service center.

DO NOT attempt to repair or adjust the furnace yourself.

When changing your unit's electrical source, as from 12-volt to shoreline or generator, turn the thermostat off. This will preserve the life of your furnace's electronic system.
Carefully read the furnace manufacturers manual for other important Do's and Dont's of service and operation.

Preventive Maintenance
Preventive maintenance should be performed annually by an authorized dealer and should include cleaning of heat exchanger, furnace ducts and blower wheels to remove dust, lint and other foreign materials. The furnace's LP gas system should also be checked. Check manufacturer's manual for further information.



HEAT & COOL WALL THERMOSTAT (TYPICAL)

REFRIGERATOR
Your refrigerator is two-way (LP gas and 120-volt electricity). It is equipped with a control system, which can automatically select the most suitable energy source which is available, either 120-volt AC, or LP gas operation. The refrigerator can be run either in a factory preset temperature setting AUTO mode, or in MANUAL mode.The refrigerator controls will work down to 9.6-volt DC.

Note: Under certain cool weather conditions the food in the lower portion of the fresh food compartment may freeze if operated for extended period of time in the MANUAL mode.

NOTES:

WARNING!!! WARNING!!! WARNING!!! WARNING!!!
MOST LP GAS APPLIANCES USED IN RECREATIONAL VEHICLES ARE VENTED TO THE OUTSIDE OF THE VEHICLE. WHEN PARKED CLOSE TO A GASOLINE PUMP, IT IS POSSIBLE THAT THE GASOLINE FUMES COULD ENTER THIS TYPE OF APPLIANCE AND IGNITE FROM THE BURNER FLAME, **CAUSING A FIRE OR AN EXPLOSION.**
FOR YOUR SAFETY, IT IS RECOMMENDED THAT ALL LP GAS APPLIANCES WHICH ARE VENTED TO THE OUTSIDE SHOULD BE SHUT OFF WHEN REFUELING.
WARNING !!! WARNING !!! WARNING !!! WARNING !!!

Your refrigerator comes with operational instructions and most have instructions posted near the controls. Ask your dealer to demonstrate the operation of the refrigerator in your RV. The instructions given here are for your convenience; in case of a difference, use the instructions furnished with your refrigerator.

The refrigerator operates on the gravity flow of chemicals, so it must be level. If you must stop on an uneven site for more than 30 minutes, turn the refrigerator OFF. Use a level in the freezer compartment to check levelness.

Before starting on a trip, use the shoreline connection to cool the refrigerator the night before departing. Keep items to be stored in the RV refrigerator in your home refrigerator or freezer until you are ready to leave. This will reduce the cooling load on your refrigerator and help keep perishable foods fresh longer.

Always store food in sealable containers or suitable wrapping. When traveling, switch to LP gas operation. Use door lock during travel.

Note: Some states and municipalities do not allow operation of LP gas systems while the vehicle is in motion. If you have a question in this regard, check with local law enforcement authorities.

Start Up Instructions

A. A Continuous 12-volt DC supply must be available for the electronic control to function.

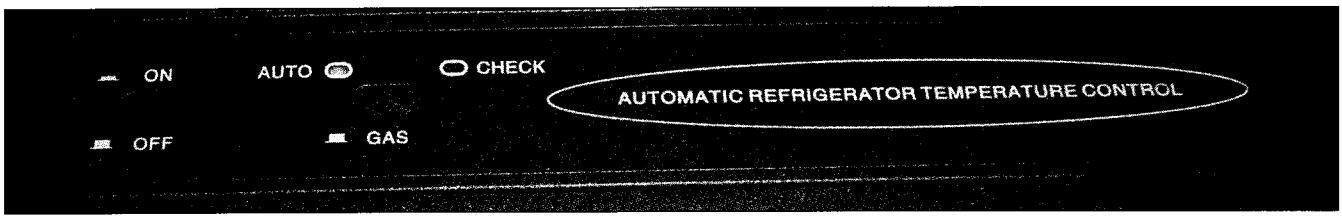
B. Press the main power ON/OFF button to the DOWN position.

C. In AUTO mode operation, the temperature is automatically controlled by a factory preset temperature setting, on the energy source selected by the control system.

D. In MANUAL mode operation, the refrigerator will run continuously on the energy source selected by the control system.

NOTES:

Note: Under certain cool weather conditions the food in the portion of the fresh food compartment may freeze if operated extended period of time on this mode.



REFRIGERATOR CONTROL PANEL

Auto Mode

1. Press the AUTO/MANUAL mode selector button to the DOWN position. The AUTO mode indicator lamp will illuminate. If 120-volts available, the control system will select AC operation. If 120-vo is not available, the control system will automatically switch to operation. Within 45 seconds the burner should be ignited operating normally.
2. If the CHECK indicator lamp illuminates, the control has failed ignite the burner on GAS. To reset when the CHECK indicator lamp is illuminated, press the main power ON/OFF button to the OFF then ON position.
3. On the initial refrigerator start-up on gas (120-volts AC is available), it may take longer than 45 seconds to allow air to purged from the gas line. If the refrigerator has not been used for long time or the LP tanks have just been refilled, air may be trapped in the supply lines. To purge the air from the lines may require resetting the main power ON/OFF button three or four times, repeated attempts fail to start the LP gas operation, check to make sure that the LP gas supply tanks are not empty and all manual shutoff valves in the lines are open. If the problem is still not corrected, contact a service center for assistance.

Note: Do not continue to reset GAS operation if the CHECK indicator lamp continues to be illuminated after several tries.

4. In AUTO mode operation, the temperature is automatically controlled by the factory preset temperature setting.

Manual Mode

Move the AUTO/MANUAL mode selector button to the UP position. The AUTO mode indicator lamp will go off.

The difference between AUTO mode and MANUAL mode is that in MANUAL mode operation, the refrigerator will run continuously on the energy source selected by the control system.

Note: Under certain cool weather conditions the food in the lower portion of the fresh food compartment may freeze if operated for extended period of time on this mode.

To Shut Off Refrigerator
The refrigerator may be shut off while in any mode of operation by pressing the main power ON/OFF button to the UP (OFF) position. This shuts off all DC power to the control system.

Note: To avoid running out of battery power, the climate control should be turned OFF. The interior light should be turned off during defrosting and storage periods, use a tape to close the light switch or remove the lamp bulb.

Care of Refrigerator
Remove food and ice after each trip. Clean the interior of the refrigerator with a lukewarm, mild baking soda solution. The evaporator, ice trays and shelves must, however, be cleaned with warm water only. Wipe dry with a soft, dry cloth. Never use strong chemicals or abrasives to clean the refrigerator; they can do harm to the plastic and aluminum surfaces.

If the refrigerator is not in use for a period of time, turn all power OFF, empty and clean the interior and leave the door slightly ajar.

To defrost refrigerator, remove food and ice. Turn the thermostat OFF To speed up the defrosting process, fill the ice trays with hot water. When all frost is melted, empty the drip tray and dry the interior of the refrigerator with a clean cloth.

Replace the drip tray and ice trays, replace all food stuffs and set the thermostat at MAX for a few hours. When the interior is cold, reset the thermostat knob to its normal position.

Optional Refrigerator with Ice Maker
Your RV may have an optional refrigerator with a built-in automatic ice maker. Please refer to manufacturer's owner's manual for care and operating instructions.

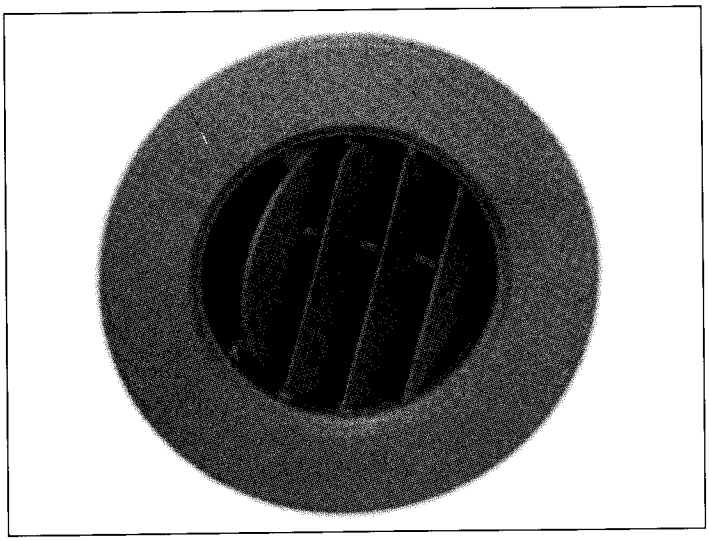
WASHER/DRYER
Some Coachmen models have an optional Washer/Dryer combination. This appliance has been carefully engineered for recreational vehicle use. To obtain the best possible results from this product, please read and follow the appliance manufacturer's instructions found in the booklet that came with your unit. After insuring that the instructions have been carefully followed; if you still have questions, please seek the advice or assistance of your authorized Coachmen dealer or Service Center.

NOTES:

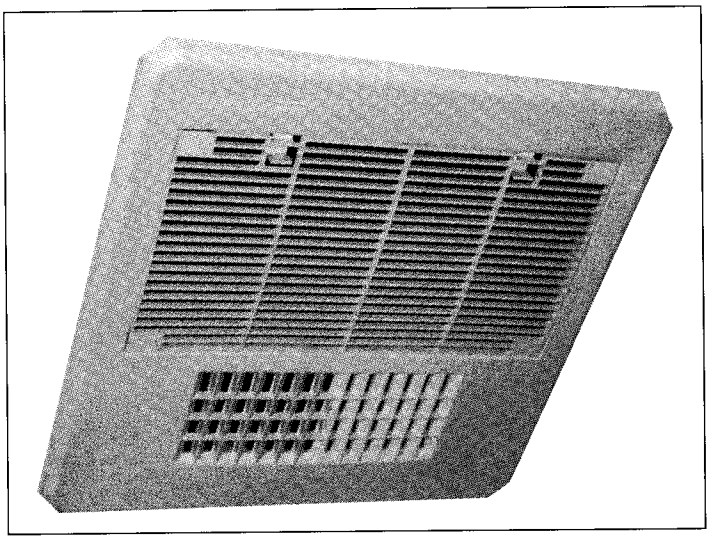
ROOF AIR CONDITIONERS

If you did not order the optional roof air conditioner at the time of purchase, your RV is wired so that one (or two) can be installed at a later date. The roof air conditioner will operate only on 120 volt electricity.

The ducted roof air conditioning system is optional on most travel trailers and fifth wheels. It utilizes ducts in the ceiling to distribute the air flow throughout your recreational vehicle. The air flow can be regulated by opening and or closing the outlets of your choice. The thermostat for the ducted A/C system also controls the furnace.



AIR CONDITIONER CEILING VENT



QUICK COOL FEATURE

The optional heat unit on some A/C models is not a substitute for the primary heating system. It is designed to warm the air during moderately cool days or nights. If your air conditioner is equipped with the optional heat package, turn the selector switch to HEAT and rotate or slide the selector switch to the position most comfortable and adjust the directional louvers to the desired direction of air flow. The heater will cycle on and off automatically to maintain the temperature.

MISCELLANEOUS ELECTRONIC EQUIPMENT

There are many different models, styles, and manufacturers of electronic equipment in your RV; both as standard and optional equipment. The User's manual for each item is supplied with your unit. Please refer to the manufacturer's manual for information regarding the specific brand and model you have.

NOTES:

STORAGE AND WINTERIZATION

STORAGE

Consider using the following procedures if you will not be using your unit for sixty days or more and when storing your RV for a prolonged period of time.

LP Gas

Close the LP gas container's Service valve. Extinguish all pilots and close all LP appliance gas valves (i.e. oven/range, water heater, refrigerator, furnace). Light a range burner to consume any gas remaining in the lines. When the flame burns out, turn the range burner off. This process will bleed the gas out of the lines that remains after turning the appliance gas valve off.

Water Tank

To drain the water tank, turn the water pump on and open all faucet's. Open the tank's drain valve and all hot and cold water line drain valves. When the tank is empty, close all faucet's and drain valves.

Water Heater

The water heater has a drain plug or drain cock which must be opened or removed in order to release the water. To facilitate drainage, open all hot water faucet's. When water stops flowing from the drain valve and the hot water faucet's, replace the plug.

Water Pump

When the water tank and water lines have been drained, remove the outlet hose from the pump. Turn the pump on, allowing it to pump out any remaining water, usually about a cupful. Use a small container or cloth to catch this water. Reattach the outlet hose.

Electrical System

Turn off all circuit breakers at the Power Center. Disconnect all loads from the battery. Be sure the battery is fully charged.

General

Close and secure all doors and windows. Open a roof vent or window slightly to allow circulation, but not so far that snow or rain can enter.

WARNING !!!

HYDROGEN GAS CAN BE PRODUCED IN A HOT WATER SYSTEM SERVED BY A HEATER THAT HAS NOT BEEN USED FOR A LONG PERIOD OF TIME (GENERALLY TWO WEEKS OR MORE). HYDROGEN GAS IS EXTREMELY FLAMMABLE. TO REDUCE THE RISK OF INJURY UNDER THESE CONDITIONS, IT IS RECOMMENDED THAT THE HOT WATER FAUCET BE OPENED FOR SEVERAL MINUTES AT THE KITCHEN SINK BEFORE USING ANY ELECTRICAL APPLIANCE.

NOTES:

DO NOT USE AUTOMOTIVE ANTIFREEZE IN THE WATER OR SEWAGE SYSTEM. IT IS POISONOUS AND ALSO CORROSIVE TO SEWAGE SYSTEM COMPONENTS.

WINTERIZATION

Make special preparations for storing your unit in cold winter climates. All systems and components should be inspected and, if necessary, repaired prior to storage. Be sure to winterize the RV before removing the RV battery.

Note: If you will be using your RV during cold weather, be certain to keep the fresh water system drained or use an approved, non-toxic RV antifreeze to prevent freeze-ups. Consult your authorized dealer for more information.

Refrigerator

Remove all food from the refrigerator, defrost, wash and dry the inside. Prop the door open so air can circulate.

Cabinets

Check the staple foods in your cupboards and remove any that could freeze or be damaged. Leave cabinet and closet doors open a little to prevent a musty odor or mildew.

Holding Tanks

The dump valve shafts should be inspected and lubricated. Be certain the dump valves are closed.

Fresh Water System

Drain as described in the STORAGE section of this manual, then pour two gallons of non-toxic RV anti-freeze into the gravity water fill. Turn shut off valves at the water heater to the winterize position. (If you wish to put anti-freeze in the water heater, use six gallons of RV anti-freeze and leave the shut off valves in the normal position). Winterize the fresh water system by briefly opening all water faucet's and switching the water pump on. Close faucet's when anti-freeze flows out. Switch pump off. Pour anti-freeze (non-toxic) into sinks and shower/tub. Use enough to fill P-traps.

Water Heater

Drain the water heater (see water heater draining in APPLIANCE SECTION). Although about two quarts of water will remain after the heater has been drained, there is ample room for expansion if it freezes.

Water Tank

Drain by switching the water pump on and opening all faucet's. Open the tank's drain valve. Open all hot and cold water line drain valves. When the tank is empty, close all faucet's and drain valves.

NOTES:

Water Pump
The water pump should be drained when the water tank and water lines have been drained. Remove the outlet hose from the pump. Turn pump on, allowing it to pump out any remaining water, usually about a cupful. Use a towel or other cloth to catch this water. You can re-attach the outlet hose now or later.

⚠ CAUTION!!!
DO NOT USE AUTOMOTIVE ANTIFREEZE IN THE WATER OR SEWAGE SYSTEM. IT IS POISONOUS AND ALSO CORROSIVE TO SEWAGE SYSTEM COMPONENTS.

Toilet
Flush toilet until antifreeze is present in the bowl. Pour one gallon of approved, non-toxic RV antifreeze down the toilet to winterize the waste water holding tank. The toilet water supply line should be drained completely and the water supply valve should be left open. On models with pedals, this can be done by inserting a round object, like a soft drink bottle, into the flush hole in the bowl. On models with the black/white levers, block the white lever in the open position with a wad of paper. When using air pressure to drain the water line, toilet valve should be held in the open position. If water is inadvertently frozen in the toilet, do not flush until the ice is thawed.

Note: Do not use automotive antifreeze in the water or sewage system. It is poisonous and also corrosive to sewage system components.

LP Gas Regulator
Cover to keep moisture, Out of vent. LP gas system should be prepared as described in STORAGE section. Containers should have anhydrous methanol added by an LP gas supplier.

RV Battery
Recharge and add water, if necessary. Disconnect the battery cables and store battery in a cool, dry place. Check regularly and recharge as needed. Do not store battery in an area where possible exposure to extreme heat or sparks can occur. Be sure room is properly ventilated to dispel hydrogen fumes given off by battery.

Windows
Cover with newspaper or cardboard to protect fabrics from fading.

Exterior Vents
Cover range hood, refrigerator and furnace vents with plastic. Inspect all roof vents and replace, if necessary.

Note: Never use appliances with vent covers in place.

NOTES:

Exterior
Clean and wax, lubricate locks and hinges. Check under the motorhome for any openings which would allow varmints to enter and seal if necessary. Lock securely. Inspect throughout the winter months and remove any snow accumulation from the roof with a long-handled broom or similar tool.

⚠ CAUTION!!!
Please note all EMERGENCY exits and see that each member of your party knows the emergency locations and their operation.

SAFETY FEATURES

Prevention is the best form of safety. Observe the same precautions in your RV as you do in your home. Use care with any open flame inside of your unit. Follow the instructions for the care and maintenance, and operation of the various appliances in your RV. Be sure everyone in your party is familiar with the emergency features of the unit, the location of exits and the location and operation of fire extinguishers. (It is recommended that a fire drill be conducted on a regular basis to ensure this knowledge.)

SMOKE, LP ,CARBON MONOXIDE DETECTORS & FIRE EXTINGUISHER

Fire Extinguisher
A chemical fire extinguisher may be furnished with your unit. Check it regularly to be sure it is ready for emergency use. Immediately replace a fire extinguisher that is discharged or partially discharged. Fire extinguishers are located directly inside the front entrance door on either a cabinet or on the sidewall.

Detectors
Test your detectors after the vehicle has been in storage, before each trip and weekly during use.

NOTE: **Refer to the product manufacturer's owner's manual for complete operation, maintenance and testing procedures.**

Emergency Exits
Windows that double as an 'Emergency' exit will be marked by a label with one-inch, red letters. Handles that must be operated to open Emergency exits will be colored red. Be sure your dealer explains the location and operation of the emergency exits and that all members of your party are informed.

RV MAINTENANCE

RV owners are noted for the pride they take in the appearance of their units. Proper maintenance will do more than keep your RV looking nice. It can help ensure trouble-free operation and maximum efficiency of the appliances and accessories. Failure to maintain the vehicle or its components may also constitute a breach of your warranty obligations. Just as an open window or an unrepaired leak in your home may lead to costly damage, the failure to repair leaks in your vehicle or to reseal your seams may result in serious damage. Read the various appliance and component manufacturer's manuals for specific maintenance information.

Unless otherwise noted, maintenance functions should be performed at least annually. All maintenance schedules listed are the minimum requirement; heavy use, unusual temperatures or humidity, or other environmental conditions may require more frequent maintenance.

At the start of each season, or after a period of storage, thoroughly inspect and test all systems and components to be certain they are functioning properly. Airing of the unit is essential before you occupy it. See details under the AIR QUALITY and CONDENSATION sections of this manual.

Automotive System—Be sure to check your tow vehicle as outlined in the tow vehicle manufacturer's owner's manual.

Awning Supports and bright metal parts should be cleaned and coated with silicone annually.

Axle and Suspension should be inspected frequently; paint and adjust as necessary.

Batteries should be inspected frequently and refilled or recharged as necessary; battery cables and terminals should be checked and cleaned every 90 days.

Body should be washed to remove dirt, dust, road tar, bird and tree droppings, insects, and other foreign material from exterior surfaces. Use a mild soap in lukewarm water. Apply an automotive-type wax at least once a year.

Brakes should be inspected every six months and replaced as necessary.

Bumper and Frames that are painted, or any exposed painted surface, should be inspected for damage and rust. Rust should be removed and bumper and frame painted with rust preventive paint annually.

Counter and Table Tops should be cleaned periodically with a mild detergent and polished with a product such as Pride or Pledge.

NOTES:

Cushions, Chairs, Sofas may be labeled with the voluntary industry cleanability code. Because dyes or backings on some upholstery fabrics will be affected by water or solvents, the clean-ability code will indicate the cleaning method that is safe for your fabric. If the furniture is not coded, test the fabric for discoloration on an inconspicuous part of the furniture before spot-cleaning. The code is symbolized by the following letter:

W
Use only water-based cleaning agents or foam. Mix two tablespoons ammonia or detergent, such as Ajax liquid, with a quart of water. Wipe the stain gently with a clean cloth dampened with the solution. Continue wiping, turning the cloth so that you are always using a clean portion, until the stain is removed. Be careful not to wet the fabric too much. Always wipe from the outer edge of the stain toward the center.

S
Use only mild, pure, water-free dry-cleaning solvents, such as Energine or Carbona. Dampen a clean cloth with the solvent and follow the same procedure described under W.

WS
Either of the above methods may be used.

X
Clean fabric only by vacuuming or light brushing to remove soil. Do not use liquid cleaning agents of any kind.

TYPES OF STAINS
Water-Based—ketchup, soft drinks, milk, etc. Remove using method W.

Oil-Based—salad dressing, butter, greasy food, etc. Use method S or, for flat-woven fabrics, not velvet, apply Texize K2R Spot Remover according to directions.

Combination—ice cream, gravy, etc. are both watery and oily. Remove these types of stains using the S method and follow with the W method.

Mud—lift away what you can easily remove without forcing the mud into the fabric. Allow the remaining mud to dry completely, then vacuum. If the stain remains, clean with method W.

When overall cleaning is necessary, professional cleaners are recommended. However, if you wish to do it yourself, follow these suggestions:

1. Vacuum thoroughly.
2. Test fabric for discoloration on an inconspicuous place using a foam cleaner such as Fibre Fresh Concentrate or Glamorene.

3. If no discoloration appears, use cleaner on entire item.

Note: Many velvet fabrics cannot be cleaned with water-based cleaning agents.

4. After cleaning, you may wish to apply Scotchgard fabric protector to such areas as furniture arms, backs and cushions.

Note: The above information is provided only as a service and should not be interpreted as a warranty. The list of cleaning agents does not constitute an endorsement of products; other similar products may be equally effective.

Door Step—The door step must be returned to its travel position before the unit is safe for traveling. To do this, lift the front edge of the step and push it under the unit.

Draperies, Curtains, Bedspreads should be dry-cleaned only.

Electrical System should be inspected and tested prior to each trip. Check the shoreline for damage. Test the 120 volt system for proper polarity and voltage. You may want to purchase a ground monitor and a line voltage tester to perform these checks.

Exterior Access Doors—Exterior access doors for storage and equipment should be closed and locked.

Fabrics need regular and continuing care. To keep them at their best, vacuum and brush away loose dirt before it becomes embedded and more difficult to remove. Clean spills and stains while fresh. VELVET fabrics should be cleaned with extreme care. Spills on velvet generally will bead-up. Blot them up quickly and gently so as not to force the stain deep into the fabric. If a stain remains, spot-clean using one of the methods described below. Wipe the stain in the direction of the pile to prevent distortion. When the fabric is dry, gently brush with a soft brush. Many velvet fabrics cannot be cleaned with water-based cleaned agents.

Floor Coverings should be cleaned as necessary. Vacuum carpeting Avoid using heavy moisture; it could enter and damage your floor.

Parquet Wood Flooring—This optional flooring is located in the kitchen area. Never damp mop with water. It will permanently damage the floor. A slightly damp cloth is acceptable to use for spills in small areas. Please refer to owners' packet for maintenance and troubleshooting.

Hinges should be inspected and lubricated with light household oil periodically.

NOTES:

Hitch Ball/Pin (latch, coupler, fifth wheel plate) should be inspected prior to each trip and lubricated every 90 days.

Interior Doors and Drawers—Close and secure all interior doors and drawers in your unit. Store or secure all loose items.

Jacks (manually operated) should be inspected prior to each trip and lubricated every 90 days. Power jacks also should be inspected prior to each trip, but lubrication is required annually. See the instructions provided with the power jack installed on your unit for specific details. Periodically apply a small amount of WD-40 or similar lubricant at friction points of stabilizing jacks.

Jack Foot/Dolly Wheel (Travel Trailer)—Raise the jacks as far as possible. Remove the dolly wheel/jack foot and store in your tow vehicle trunk or in a secure place in the RV unit.

Jack Foot (Fifth Wheel)—Raise the jack as far as possible. Remove the adjusting pin from each jack. Raise the adjusting leg as far as possible and reinsert the pin.

Locks and Latches should be inspected and lightly lubricated with graphite periodically.

LP Gas system should be inspected and adjusted as outlined in LP Gas section of this manual. Be certain mounting supports for tanks are secure. Before using, be sure all LP gas orifices and vents are clean.

LP Gas Line Check should be performed frequently. Always check the gas line connection after each refill and inspect the connections regularly, at least every 30 days or 5,000 miles of travel. To check, turn off all burners and pilot lights. Open all doors and windows. Open the LP gas tank Service valve and use an approved LP leak detector solution to test all line connections. Bubbles indicate a leak. Do not use products that contain ammonia or chlorine. Tighten the connection with two open end wrenches until bubbles stop. If leak persists, contact your dealer.

LP Gas Bottles—LP gas bottles and connections should be secured.

Note: Some states prohibit vehicles equipped with LP gas bottles from using tunnels. A few other states prohibit traveling with the Service Valve open and the pilots lit. Check the regulations of the state through which you intend to travel.

Lug Nuts should be checked after 10, 25 and 50 miles or whenever a wheel has been reinstalled. If lug nuts continue to loosen, they should be replaced. Be certain to use the proper torque (90 to 120 ft./lbs.). For more information check Chassis owner's manual.

Pigtail Contacts should be inspected and coated with WD-40 every 90 days.

Refrigerator Door-Secure the refrigerator door with the travel latch.

Rock Guard Awning—The unit awning should be lowered and secured. To lower the awning, loosen the wing nuts and slide the awning down. Pull the retaining pins and seat in the latch hole. To raise the awning, pull the retaining pins out and slide the awning up. Tighten the wing nuts to secure the awning at the desired height.

Roof, Body, Underbelly should be inspected for damage, rust or corrosion every 90 days and repaired as necessary.

Rubber Roof

1. Keep your roof clean. Clean your roof four (4) times annually. For normal Cleaning:

- Use a mild laundry detergent. DO NOT use general purpose cleaners containing petroleum solvents, harsh abrasives, or citric based cleaners.

- Rinse the roof thoroughly to remove any loose dirt or debris.
- Using a medium bristle brush along with your selected cleaner mixed with water, scrub the entire roof. Rinse thoroughly with clean water to avoid residue build up on the roof or side wall of the vehicle.
- For more difficult stains, you may use cleaning materials mentioned above in a more concentrated mixture. For stubborn stains, use of a rag dampened with mineral spirits is recommended. DO NOT use mineral spirits in a large area or allow it to soak into the membrane. Household bleach or windshield washer fluid can also be used (fully concentrated) and allowed to soak in stubborn stain areas, then scrubbed with a medium bristle brush or rag. Rinse thoroughly.

2. Beware of areas where fruit or tree sap or harsh environmental fall out may stay on the roof for an extended period of time. These conditions may result in permanent stains. If you are in areas where these conditions exist, you may have to increase the frequency of your cleaning or premature deterioration may occur. NOTE: If an accident occurs and you damage the roof, here is a temporary fix: Clean the affected area with a rag dampened with mineral spirits and let dry. Cover the area by overlapping layers of duct tape over the troubled area, until a permanent repair can be made by your dealer.

Safety Chains should be inspected for damage prior to each trip. Replace the chains if they are weakened.

Safety Chains and Breakaway Switch Activator Cable—Make sure that the safety chains and breakaway switch activator cable are properly attached to the tow vehicle.

NOTES:

Seams or Joints should be sealed around the roof, entrance doors, windows, roof and wall vents, access doors, storage compartments, roof edges, luggage racks, ladders, air conditioners, TV antenna, rails and moldings at least once each year with a similar high-quality sealant. Inspect all seams and joints at least twice a year and reseal as necessary. Some sealants cannot be applied over other types; when preparing areas to be resealed, scrape off old sealant. Clean metal areas with a vinegar and warm water solution. Clean fiberglass areas with mineral spirits before applying new sealant.

Sewage Termination Valves—These valves must be closed and locked before you travel. The sewer hose must be removed from the termination valve outlet and stored in the appropriate compartment.

Termination caps must be securely fastened to the termination valve outlet(s).

Shades, Blinds and Valances should be vacuumed or wiped with a damp cloth.

Sinks in the RV kitchen and bathroom should be cleaned with a cleaner that is non-abrasive. Stainless steel and porcelain cleaner may be purchased at most grocery stores. ABS cleaner may be purchased from your dealer.

Stabilizing Jacks—Complete retract and store jacks in their self storage area.

Step(s) should be inspected annually. Remove rust; paint steps and lubricate all moving parts.

Tires should be checked for damage and proper inflation prior to each trip. Bias-ply tires should be balanced and rotated annually; Radial tires should be balanced as necessary but, if required, these tires should be rotated front-to-rear or rear-to-front only.

TV Antenna exterior moving parts should be lubricated periodically. The TV antenna must be cranked down to its' traveling position.

Vents should be inspected and cleaned annually; lightly oil all moving parts. Inspect vents periodically for bird nests.

Vinyl-Coated ceiling and wall panels should be cleaned with a mild soap and damp sponge as needed.

Water Heater control compartment should be kept clean and free of combustible material and flammable liquids. The vent and combustible air grille should be clear of any obstructions. Manually operate the pressure temperature relief valve at least once a year. Operate only when storage water in tank is cool. Periodically compare main and pilot burner flame with illustrations in the manufacturer's operation instruction manual.

NOTES:

Do not tamper with the pilot orifice to increase the pilot flame size; this can cause high water temperature and failure of gas control.

Wheel Bearings should be cleaned and repacked at least once a year.

Windows, Doors, Compartment Doors should be inspected fordamage or leaks prior to each trip. Replace any damaged or worn parts. Fix 01 replace any leaking parts. Lubricate moving parts and rubber seals with silicone lubricant. Clean dirt and debris from window tracks.
Windows and Vents—All windows and vents should be closed completely or adjusted as desired before you travel.

Wood Cabinetry should be protected and cleaned several times a year using any good non-silicone wood polish. Careful control of temperature and humidity will help reduce expansion and shrinkage doors and door panels. If shrinkage occurs and unfinished parts of the door panels are exposed, cover the exposed areas with matching touch-up stain available from your dealer.

TRAVEL CHECKLIST

Suggestions of items to take for your comfort and convenience:

TOOL CHEST	CAMPING COMFORT	PERSONAL COMFORT
Screwdrivers	Dish washing soap	Towels
Pliers	Dish Cloth	Washcloths
Hammers	Dish Towel	Sheets
Tire pressure gauge	Trash Bags	Pillows
Small Level	Mop	Pillow Cases
Electrical Tape	Broom	Blankets
Masking Tape	Vacuum cleaner	Sleeping Bags
Wrenches	Dust pan	Toilet paper
Allen wrench	Paper towels	Soap
Furnace duct tape	Plastic containers/bags	Toothbrush
Hatchet	Foil or Plastic Wrap	Personal toiletries
Shovel	Throw rug	Scissors
Saw	Grilling utensils	Sewing kit
12volt portable tire pump	Fly swatter	Small trash can
Flares	Matches	Sunblock
Tow rope and/or chain	Atlas	Umbrella
Reflectors	Compass	Candles
Twine/Rope	Fire Extinguisher	Cooking utensils
Utility knife	Pen/paper	Hot pads
	Cooler/Ice chest	Coat hangers
	Garden Hose	Bucket
	20 ft. 3 prong power cord	Games/Toys
	Fuses/Jack/Jack Stands	Camera/Film/Binoculars

NOTES:

PRE-TRAVEL CHECKLIST

GENERAL DRIVING CHECKS

Front Jacks—The front jacks must be raised as far as possible.
Lights—The following lights should be tested on both the RV and the tow vehicle: brake lights, warning lights, flashers, clearance lights, tail lights and headlights. Clean all lens covers.
Pigtail—The pigtail should be connected properly to the tow vehicle's electrical harness.
Hitch Coupler/Pinbox—Inspect the hitch coupler or pinbox to be sure they have not loosened.
Rearview Mirrors—Adjust the rear-view mirrors so that the driver can see the right and left sides of the unit.

OTHER DRIVING CHECKS

Whether you are departing from your home, rest area or campsite, you should check the following parts of your RV before you take off.

Tires—Before each trip, check your tires for uneven wear, road damage, foreign objects or excessive peeling or bulging. Each morning, inspect the condition and pressure. Heat generated by surface friction will increase the tire's air pressure approximately six to nine psi; therefore, do not bleed air out of a hot tire. Inflate the tire to the recommended pressure (indicated either on the tire or in the manufacturer's instruction booklet).

Tire Change— in the event of a FLAT or WORN tire—Turn on tow vehicle's hazard warning flashers. Set up flares or warning lights. Put a chock under the opposite tire and unhitch the unit from the tow vehicle. Place a scissors-type or hydraulic jack on a block of wood directly UNDER THE FRAME close to the tire you intend to change. DO NOT use a bumper jack; it could damage the side-walls or floor board. Raise the jack to take weight off the tire. Loosen the lug nuts. Raise the jack until the tire clears the ground, then remove the lug nuts. Pull the tire off and put the spare tire on the hub. Replace and tighten lug nuts. Lower the jack until the tire just touches the ground.

WARNING!!!
NEVER PLACE THE JACK UNDER A BUMPER OR EDGE OF THE SIDE-WALL. USE THE JACK ONLY FOR CHANGING TIRES. NEVER GET UNDERNEATH THE VEHICLE WHEN IT IS SUPPORTED BY THE JACK. ALWAYS SECURELY STOW THE SPARE TIRE IN THE PROPER STORAGE AREA.

Note:

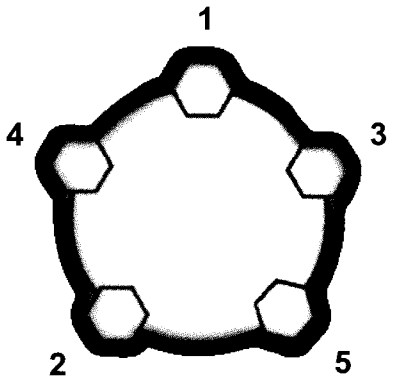
Under inflation is the leading cause of RV tire failures. The second most common cause is AGE! Tires do not last forever, even though they may look satisfactory. Statistics indicate that the average life of an RV tire is 5 to 7 years. Determine the age of tires by checking the DOT code on the sidewall. Find the string of numbers and letters that start with DOT and refer to the last three digits. The first 2 digits are the CALENDAR WEEK the tire was in the mold, while the final digit indicateds the YEAR. Beginning in the year 2000, there are four digits: two for the calendar week and two for the year.

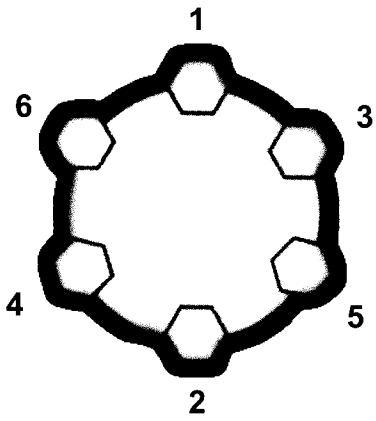
Lug Torque—

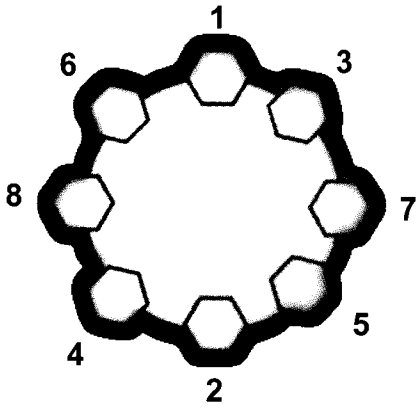
1. Start all bolts or nuts by hand to prevent cross threading.
2. Tighten bolts or nuts in the following sequence.
3. Tightening fasteners should be done in stages. Follow the recommended sequence, tighten fasteners per wheel torque requirements diagram
4. Wheel nuts/bolts should be torqued before first road use and after each wheel removal. check and re-torque after the first 50 miles and again at 100 miles. A periodic check during regular service is recommended.

Wheel Size	Torque Sequence		
	1st Stage	2nd Stage	3rd Stage
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120
16.5" x 6.75"	20-25	50-60	90-120

Note: All torque in ft.- lb.







Tires

Prior to mounting tires onto wheels, be sure the rim size and contour are approved by the Tire and Rim Association Yearbook or the tire manufacturers catalog. In addition, confirm that the tire will carry the rated load. If the load is not evenly distributed on all tires, use the tire rated for the heaviest wheel position.

The Rubber Manufacturers Assosiation or the tire manufacturers guidelines should be consulted for mounting procedures. Tire inflation pressure is the most important factor in tire life. Tire pressure should always be what is recommended by the manufacturer for the load. Always check pressure cold before operation. DO NOT bleed air from tires when they are hot. Check inflation pressure weekly during use to insure maximum tire and tread life. The following tire wear diagnostic chart will help you pinpoint the causes and solutions of tire wear problems.

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

NOTES:

Tighten the lug nuts to a torque of 90 to 120 ft./lbs. Lower and remove jack. Stop at the nearest service station and have the torque checked and spare tire air pressure checked. You may need to replace the lug nuts after changing tires five times. The lug nuts lose their self-locking feature after that many changes.

Wheel Lugs—Wheel lugs must be tightened after 10, 25 and 50 whenever a wheel has been reinstalled. Thereafter, check lugs after storage.

Power Cord—The 120-volt shoreline power cord must be unplugged, from the external source and placed into its compartment. The cord hatch must be secured before you travel.

Water Fill Hose(s)—All hoses must be disconnected and all hose caps must be secured before you travel.

TROUBLESHOOTING GUIDE

Note: Use the product manufacturer's owner's manual for all appliance troubleshooting.

PROBLEM	CAUSE	SOLUTION
Electrical Power		
No electrical power to unit	1) Shoreline Connection	Be sure you have power to the shoreline.
	2) Circuit breaker switches may be tripped or off.	Reset breaker(s) at power center.
	3) Fuse may be blown.	Replace fuse at battery compartment.
Power Converter		
Converter making clicking noise.	1) Circuit overload	Reduce load on circuit
	2) Reversed polarity at battery	Correct polarity at battery
	3) Short in recharge line	Locate and repair short
Electrically Charged (HOT) Chassis		
Chassis is electrically charged	1) Short in 110/120v circuit	Disconnect unit from electrical supply. Have unit inspected and repaired if necessary, by a qualified service facility.

NOTES:

TROUBLESHOOTING GUIDE ....continued from previous page

Note: Use the product manufacturer's owner's manual for all appliance troubleshooting.

PROBLEM	CAUSE	SOLUTION
		Note: Determine if shoreline has proper polarity.
	2) Power cord ground not connected to earth ground	Make sure shoreline post ground is earth ground and power cord ground is used.
	3) Bad adapter plug	Replace power cord adapter
Lighting Lights flickering	1) Loose fuse holders	Tighten or replace fuse holder
	2) Blown fuse	Replace fuse with one of the same ampererating.
	3) Broken connection or wire	Replace connection and/or wire.
	4) Bad ground	Make sure ground connection is secure.
	5) Converter overheating	Reduce load and let converter cool.
Lights dim or half bright	1) Bad battery	Check battery connection
	2) Possible converter malfunction	Have converter checked by an authorized Service Center.
	3) Possible low voltage from shoreline.	Make sure voltage to shoreline is not too low.

NOTES:

TROUBLESHOOTING GUIDE ....continued from previous page

Note: Use the product manufacturer's owner's manual for all appliance troubleshooting.

PROBLEM	CAUSE	SOLUTION
Refrigerator		
Refrigerator will not cool	1) RV not level	Make sure RV is level
	2) Upper and/or lower refrigerator vents clogged	Clear vents of debris or food items that may block air flow in the vents.
	3) If refrigerator is running on gas, the tank is empty	Fill LP gas tank
	4) Blown fuse (12v)	Replace fuse with one of the same ampererating.
TV Antenna		
TV antenna has poor reception	1) Power TV jack not turned on	Turn power TV jack switch on
	2) Bad connection at TV or wall plate.	Make sure the connections are good at both TV and wall plate.
	3) Cut or nicked cable	Replace bad cable where needed at TV and antenna.
	4) Antenna not pointed in direction of 'sending' station.	Reposition antenna to point in direction of 'sending' station.
Towing		
Unit will not tow level	1) Ball hitch improperly positioned on tow vehicle.	Have ball hitch position checked by an authorized dealer for a possible solution.
	2) Unbalanced load too much weight in front or back.	Redistribute cargo to achieve the correct hitch weight.
	3) Load leveling stabilizer bars on hitch improperly adjusted.	Adjust stabilizer bars to the proper setting.

NOTES:

OWNER'S MANUAL SUPPLEMENT

TIRE SAFETY INFORMATION

Coachmen®
RECREATIONAL VEHICLE COMPANY, LLC

OWNER'S MANUAL SUPPLEMENT TIRE SAFETY

*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

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).

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.

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 underinflation 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 underinflated.

- 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 underinflated, 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 underinflated 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 underinflated 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 treadwear 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

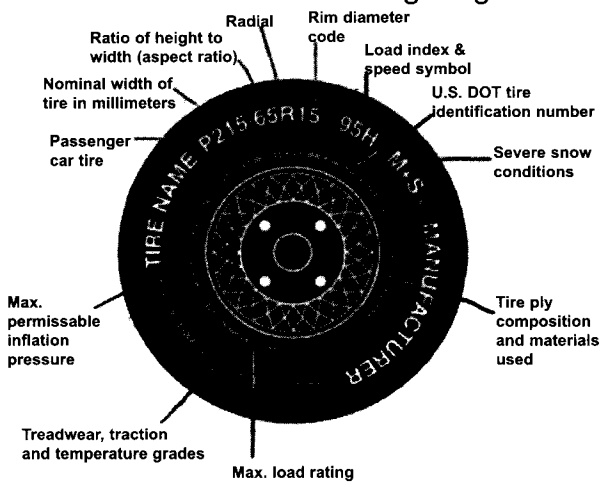
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim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

Please refer to the following diagram.



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.

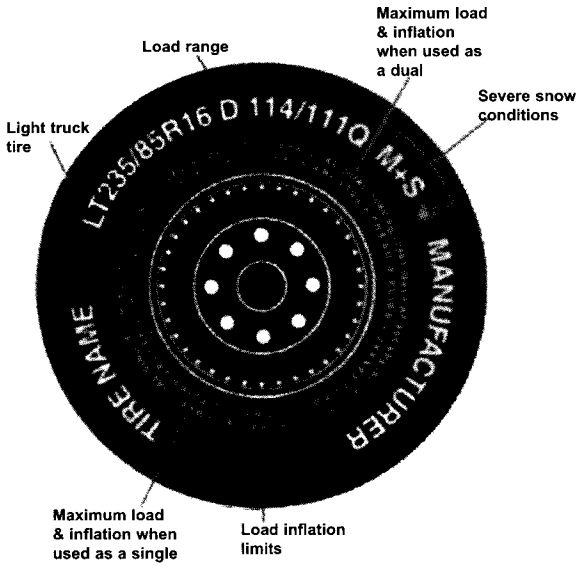
Tire Ply Composition and Materials Used - The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, 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 tire pressure when the tire is used as a dual; that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold - This information indicates the maximum load and tire 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.

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

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

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

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

Water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the RV before it is loaded with cargo and is not considered part of the disposable cargo load. Water however, is a cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount 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.

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 underinflation 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.

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 factoryinstalled 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.

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

Innerliner separation - The parting of the innerliner 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 separably, to the wheel center member and upon which the tire is attached.

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

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

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

Normal occupant weight - 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 innerliner 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.

Treadwear 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 nonpneumatic 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.

Coachmen Industries, Inc. was founded in Middlebury, Indiana, in 1964 by Claude, Keith and Tom Corson. The three brothers recognized business opportunities in the new and growing recreational vehicle (RV) industry and combined their business experience in finance, marketing and manufacturing. Their confidence in the RV industry was well founded. From first year production which included 12 travel trailers, one pick-up truck camper and 80 truck caps, the Company has become a diversified, full-line manufacturer of recreational vehicles under many well-known brank names with over 450,000 units manufactured. The Company's RV product line includes travel trailers, fifth wheel trailers, Class C mini-motorhomes and Class A motorhomes. The Coachmen RV complex of 135 acres with over 812,000 square feet of assembly facilities under roof.

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