



WILDERNESS[®]

FLEETWOOD.RV

2004

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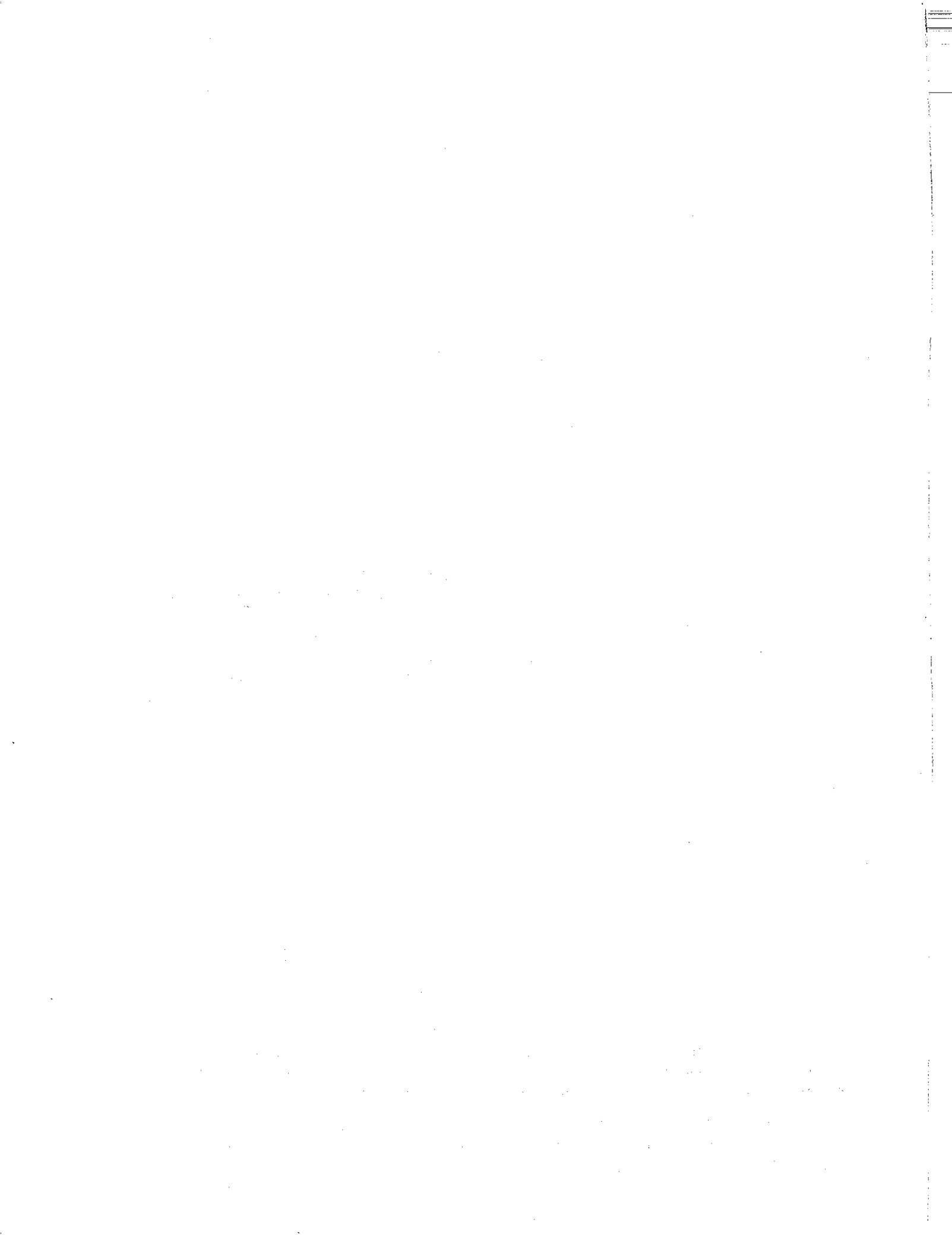


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IMPORTANT NOTICES

State laws in the United States and provincial laws in Canada vary concerning operator licensing requirements and vehicle dimensional restrictions. Check the laws in the area where you anticipate traveling.

The particle board, hardwood plywood, or paneling used in your RV are made with urea-formaldehyde resin. The companies that supply us with these materials have asked that we tell you about urea-formaldehyde with the statements on this page.

Ventilation is important for making the interior of your RV comfortable. Please read the section about ventilation and prolonged occupancy in the *Living With Your Trailer* chapter in this *Owner's Manual*.

We provide you consumer information as detailed by the National Fire Protection Association (NFPA) and the American National Standards Institute (ANSI). The information and warnings found on these pages may also be found in other chapters of this *Owner's Manual*. Please see the *LP Gas System* and *Appliances* chapters for other safety and operating information.

WARNING

This product is manufactured with urea-formaldehyde resin. Formaldehyde vapor may in some people cause headaches, eye, nose and throat irritation, and aggravation of allergies and respiratory problems, such as asthma. Proper ventilation should reduce the risk of such problems.

WARNING

This product is manufactured with a urea-formaldehyde resin and will release small quantities of formaldehyde. Formaldehyde levels in the indoor air can cause temporary eye and respiratory irritation, and may aggravate respiratory conditions or allergies. Ventilation will reduce indoor formaldehyde levels.

WARNING

Irritant: This product contains a urea-formaldehyde resin and may release formaldehyde vapors in low concentrations. Formaldehyde can be irritating to the eyes and upper respiratory system of especially susceptible persons such as those with allergies or respiratory ailments. Use with adequate ventilation. If symptoms develop, consult your physician.

Important Notices

WARNING

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

A warning label has been located near the LP gas container. This label reads: **WARNING DO NOT FILL CONTAINER(S) TO MORE THAN 80-PERCENT OF CAPACITY.**

FAILURE TO COMPLY COULD RESULT IN FIRE OR PERSONAL INJURY.

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 warning label has been placed in the vehicle near the range:

WARNING

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 LP gas supply at the container valve(s) or gas supply connection.
4. Open doors and other ventilation openings.
5. Leave the area until the odor clears.
6. Have the LP gas system checked and leakage source corrected before using again.

FAILURE TO COMPLY COULD RESULT IN FIRE OR PERSONAL INJURY.

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 LP gas pressure causing fire or explosion.

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, and
2. Open window.

FAILURE TO COMPLY COULD RESULT IN FIRE OR PERSONAL INJURY.

This 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 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.

WARNING

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

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.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

INTRODUCTION

Welcome to the recreational vehicle life-style and the growing family of trailer owners. We sincerely thank you for choosing a Fleetwood trailer!

✓ NOTE

This manual describes many features of your RV and includes some instructions for its safe use. This manual, including photographs and illustrations, is of a general nature only. Some equipment and features described or shown in this manual may be optional or because of the continuous program of product change conducted by Fleetwood, it is possible that recent product changes may not be included.

✓ NOTE

Throughout this manual the term "RV" represents a "Recreational Vehicle" as defined by the NFPA 1192/ANSI A119.2 code. This includes motor homes, fifth wheel trailers, travel trailers, camping trailers, recreational park trailers, and truck campers.

Your trailer has been designed to provide you with years of carefree, pleasant traveling and vacationing. It conforms with, or exceeds, applicable *American National Standards Institute (ANSI)*, *National Fire Protection Association (NFPA)*, *Canadian Standards Association (CSA)* (units built for Canada only), *Federal Motor Vehicle Safety Standards (FMVSS)*, *Environmental Protection Agency (EPA)* and *California Air Resources Board (CARB)* regulations. The seal attached just outside the entry door indicates compliance with *ANSI* or *CSA* standards.

Like all equipment, your trailer will require care and regular maintenance in order to deliver maximum value and performance. The dealer will give you basic operating and maintenance instructions. However, supplement this by reading all instructional material(s) furnished with the trailer in the ***Owner's Information Package***. This information outlines important areas of operation and maintenance for you to follow for safe, trouble-free service from your trailer. Study these materials carefully. A good working knowledge of your trailer and how to care for it

will help you enjoy many miles and years of recreational living.

Please pay close attention to these statements while you read this Owner's Manual.

In this manual, statements preceded by the following words are of special significance:

⚠ WARNING

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

indicates a potentially hazardous situation which, if not avoided, may result in damage to the component or vehicle.

✓ NOTE

indicates points of particular interest for more efficient and convenient operation.

If you have any questions regarding operation, maintenance, or service, please contact your dealer immediately so he can assist you. Your dealer's Service or Sales Department will handle any normal problems which might occur.

✓ NOTE

This product is designed for recreational use and short term occupancy only. It is not designed or intended to be used as permanent housing. Use of this product for long term or permanent occupancy may lead to premature deterioration of interior finishes, fabrics, carpeting, drapes, and appliances and fixtures. Damage or deterioration due to long term occupancy is not considered normal, and will under the terms of the warranty constitute misuse, abuse, or neglect, thereby reducing your warranty protection. Before considering this trailer for long term occupancy, consult the relevant sections in this manual.

Introduction

Some equipment and features described or shown in this manual may be optional or not available on some models.

Because of the continuous program of product improvement conducted by Fleetwood, it is possible that recent product changes may not be included in this manual. Specifications may change without notice. Product information, illustrations and photography included in this Owner's Manual were as accurate as possible at the time of publication, and are representative of function and may or may not be specific in their depiction of actual equipment, fabrics, interior or exterior decor or design options as installed on or in your recreational vehicle.

The instructions included in this manual are intended as a guide, and in no respect extend the responsibilities of the manufacturing subsidiary, parent company or affiliates beyond the standard written warranty as presented in this manual.

Fleetwood has designed its recreational vehicles to provide a variety of uses for its customers. Each vehicle features optimal seating, sleeping, storage and fluid capacities. The user is responsible for selecting the proper combination of loads to ensure that the recreational vehicle's capacities are not exceeded.

WARRANTIES

Your trailer is covered by one of the most comprehensive warranty programs in the RV industry. Please refer to the warranty in the front of this manual. It explains your rights and obligations, as well as the rights and obligations of the dealer and manufacturer. Please read this section carefully. You will be better informed in case you have a warranty-related problem, and your dealer will be better able to get you on the road again. If you have any questions about the warranty or what it does or does not cover, please contact your dealer.

The materials in your *Owner's Information Package* contain warranty information and oper-

ating instructions on the various appliances and components in your trailer. Warranty registration cards for these items should be filled out and mailed as soon as possible after you take delivery of your trailer. If you do not have operating instructions for a particular appliance or component, contact your dealer.

You will automatically receive an *Ownercare Card* several weeks after the delivery receipt is received from your selling dealer. This card is imprinted with your name, the trailer serial number (V.I.N.), and manufacturing subsidiary location. If your trailer ever needs warranty service, present this card to the dealer, or have it available when contacting a Fleetwood service center.

The trailer has been thoroughly inspected before shipment. ***Your dealer is responsible for performing a complete predelivery inspection of the trailer as specified in the Ownercare delivery checkout.***

You should return your trailer to the selling dealer for warranty service. If this is not possible, you may contact any other authorized Fleetwood travel trailer dealer. The service department at any of the locations listed at the back of this manual can help you find a dealer in your area.

If, for some reason, a problem is not handled to your satisfaction:

1. Discuss any warranty-related problems directly with the manager and/or owner of the dealership, giving them an opportunity to help the service department resolve the matter for you.
2. If a problem arises that has not been resolved to your satisfaction by your local dealer, contact Fleetwood Service Center. The locations are listed in the back of this manual. Please contact the one nearest you.
3. We sincerely believe that your dealer and the factory representative will be able to solve any problem which might arise. If their combined efforts are not satisfactory, please send a letter describing the circumstances to:

Fleetwood Owner Relations
P.O. Box 7638
Riverside, CA 92513-7638

Please include the brand name and serial number of your trailer. The serial number is located on the identification tag on your warranty card.

4. If you wish to call for assistance, please use this toll-free telephone number:

Fleetwood Owner Relations
(800) 445-3307

There may be times when your trailer will need repairs or parts while you are on the road. If your trailer is repaired by a non-authorized repair facility (non-Fleetwood dealer), be sure to save receipts and especially any parts that are replaced. These parts will usually have to be returned to your dealer before you can be reimbursed for their cost.

WARRANTY SERVICE

If you need service or warranty information, please see the booklets and other documents included in your *Owner's Information Package*. When contacting any of the equipment manufacturers, always have the model and serial numbers available. Appliance identification numbers will be found on tags or plates attached to the appliance.

If you ever need warranty work done, be sure to have the right papers with you. If required work is not covered under the warranty, your dealer's service department can help you with getting the correct service. Always keep a maintenance log of your RV service history.

Always make a written list of the RV problems or the specific work you want done. If you've had work done that is not on your maintenance log, let the service advisor know. Don't keep secrets.

And finally, be reasonable with requests. If you have a long list of service items that need attention and you need your RV very soon, discuss the situation with the service advisor, listing the

items in order of priority. This will help the service department manage their time and will help get you going as quickly as possible.

REPORTING SAFETY DEFECTS

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

If *NHTSA* receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign.

To contact *NHTSA*, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 or write to:

NHTSA
U.S. Department of Transportation
400 Seventh St. SW
Washington, DC 20590

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

INSPECT AND MAINTAIN

Follow a consistent schedule of inspection and maintenance for your trailer. Your continuing safety and comfort depend on it. This manual includes a section outlining maintenance intervals. If you follow the maintenance guidelines, you will minimize the possibility of failure of any important system or part of your trailer.

PLANNING AND PREPARATION

Each year millions of Americans embark on trips using some type of recreational vehicle. Proper planning of your trip will ensure a pleasurable experience. A thorough knowledge of your RV is important if you are going to get the most out of the convenience and safety items built into your trailer. Be as familiar with it as

Introduction

you are with your personal car or truck. If you have trouble or have questions, please consult your dealer.

OWNER'S INFORMATION PACKAGE

This package contains valuable documents about your trailer and its equipment and systems. The *Owner's Manual* is in this package. Since this manual does not cover every possible detail of equipment and options installed on or in your trailer, there are booklets and instructional material in the package that will help you safely operate, maintain and troubleshoot those items. ***Be sure you read all this information and understand the safety and operating instructions included in the package.*** Additionally, you must follow all maintenance instructions to insure full warranty coverage. If you decide to sell or trade your trailer, be sure the new owner receives all the material in this package.

VEHICLE IDENTIFICATION

The **V.I.N.** is located on the tag on the outside, front, roadside of the trailer. Use this number when ordering parts through your Fleetwood dealer or Service Center. (See below for an example of the V.I.N. tag.)

MANUFACTURED BY		
DATE OF MFR:		
GVWR:		
GAWR:	PER AXLE	
WITH	TIRES,	RIMS,
AT	COLD SINGLE.	
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE SHOWN ABOVE. VEHICLE TYPE: TRAILER		
V.I.N.:		



NOTE

If your **Owner's Information Package** does not contain these items, even if you purchased your trailer "used," please call or write Fleetwood and request the desired or missing information.

Fleetwood Owner Relations
P.O. Box 7638
Riverside, CA 92513-7638
(800) 445-3307

GUIDELINES FOR EQUIPMENT SELECTION AND PREPARATION

Your towing equipment, its adjustments and how you load the trailer will have a great effect on trailer towing stability and handling. The following rules will help you select and adjust your equipment in a manner that will help produce acceptable towing characteristics. Also check specific requirements in the states and provinces where you will travel.

- Use a tow vehicle with the appropriate axle capacity (GAWR) for your trailer, and which has both the appropriate powertrain and towing equipment (such as heavy duty radiator, transmission, final drive, suspension, wheels and tires). The tow vehicle must be rated by its manufacturer both to tow the gross weight (GCWR) and to carry the tongue weight of the fully loaded trailer. Weigh your loaded trailer and tow vehicle according to the instructions found in this chapter on **Trailer Loading**. Improper loading can lead to possible tire, axle and frame damage, and can lead to loss of towing stability and control resulting in a vehicle crash.
- Installation of the hitch, sway control, and brake control equipment **must** be performed by a competent hitch installer. Make sure the installation follows the tow vehicle and hitch manufacturer's instructions.
- **Conventional trailers:** Use a weight distributing hitch rated to pull not less than the trailer Gross Vehicle Weight Rating (GVWR) and with spring bars rated not more than the ratings shown under **Trailer Loading** in this chapter. The hitch must be equipped with a 2 5/16" diameter ball. Keep the hitch ball as close as practical to the rear bumper to minimize rear overhang. Under no circumstances add any hitch extenders to the rear of your tow vehicle.

Use a sway control system: installed and adjusted according to the sway control manufacturer's instructions.

- **Fifth-wheel trailers:** Use a hitch and receiver assembly sized for the 2" SAE king pin and rated to pull not less than the Gross Vehicle Weight Rating (GVWR) of the fifth-wheel trailer. The receiver should be attached to the truck chassis. No weight distributing or sway control devices are needed with a fifth-wheel hitch.

CAUTION

Fifth-wheel hitch extenders (also called "gooseneck tongue adapters") are not to be used with Fleetwood fifth-wheel trailers. Use of a hitch extending device may cause structural damage to the trailer pin box assembly or chassis. Damage caused by the use of a hitch extending device is not covered under the Ownercare warranty.

- Use a brake controller that automatically applies the brakes in proportion to the tow vehicle brakes and also has a hand control for applying the trailer brakes only. See the section in this chapter on **Braking System**.
- In the absence of properly weighing the tow vehicle and trailer it is recommended that you inflate the rear tires and the trailer tires to their maximum cold inflation pressure. The maximum tire pressure for the tow vehicle can be found on the Federal Certification Label (usually located at the drivers door jamb). The maximum tire pressure for the trailer can be found imprinted on the tire sidewall.
- Use outside mirrors installed and adjusted to allow a clear view of the area at both sides of and behind the trailer. Locate them as close as possible to the driver to provide the maximum field of view.
- If you are towing a trailer that is wider than your tow vehicle, you will need extended side view mirrors to see rear and side approaching traffic.

STATE AND LOCAL REQUIREMENTS FOR TOWING

States and municipalities may require special permits and licenses based on the size and

On The Road

weight of your trailer, especially if it is over eight feet wide. Some states require additional equipment for the tow vehicle, such as side and rear view mirrors. Inquire at your local motor vehicle administration to find out what requirements affect you.

If you plan to travel in another state, don't forget to check its requirements also. For example, surge brakes may not be legal in some jurisdictions. In addition to licenses and permits, there may be weight, height, and width limits for using certain roads, bridges, and tunnels. Also, be aware of restrictions regarding the transport of propane gas and other volatile gases or fuels in tunnels. And don't forget to contact your insurance company to make sure you have the proper coverage.

HITCHING UP

The hitch, spring bars, sway control, safety chains, and breakaway switch are all important safety devices that protect your investment as well as other peoples' lives and property. As a trailer owner, it is your responsibility to be familiar with these devices and their proper use. Make sure you read and understand the instructions furnished by the manufacturers of each of these devices.

Hitching up your trailer will become routine with experience. Make it a habit to examine all hitch components before hitching the trailer. Always inspect condition of wiring and connectors for damage and function. If you have a conventional ball hitch, check for cracked or bent parts, cracked welds, and deformed or stripped bolts. Be sure the hitch ball is tight and well lubricated. Check the trailer tongue for cracks, especially under the front crossmember. Be sure the ball locking device works freely. Inspect the safety chains. If you find defects in any hitch component, correct it before towing the trailer.

If you have a fifth-wheel model, check all truck-mounted hitch components. Check for worn, cracked, or bent parts. Be sure the pin locking

device works properly. Inspect the pin box assembly on the trailer. Check the king pin. If you find any defective components, repair or replace them before towing. Be sure that all moving parts of the hitch are well lubricated.



NOTE

Weight-carrying hitches are designed to carry all of the trailer's tongue weight. Weight-distributing hitches are used with a receiver hitch and special parts that distribute the tongue weight among all tow vehicle and trailer axles.

HITCHING PROCEDURE FOR CONVENTIONAL TRAILERS

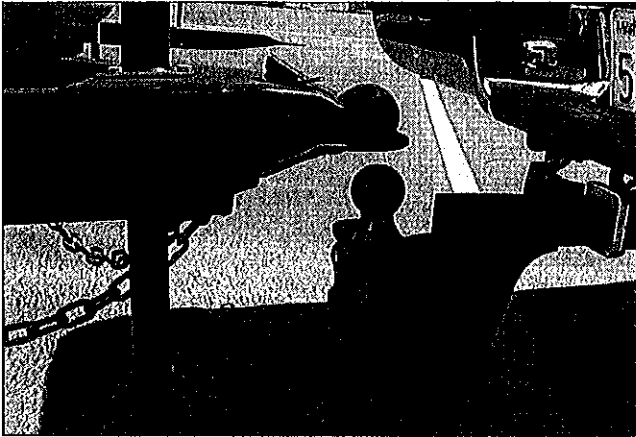
Before attempting to hitch up your trailer, read the instructions provided by the hitch manufacturer. The following instructions are usable in most cases. If the instructions provided with your hitch deviate from this procedure, follow the hitch manufacturer's instructions.

Hitching up a trailer is recommended to be done with a two-person team, one to drive the vehicle and one to spot the hitch and trailer.

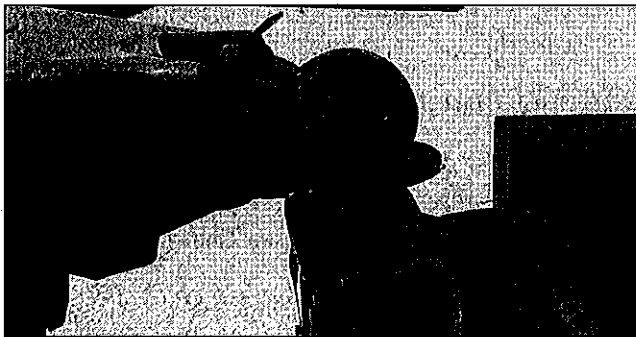
The trailer should be on flat level ground when stored. When hitching up it is recommended that a set of wheel chocks be used on at least one tire. One chock in front of the tire and one chock behind the tire. This will help reduce any unintentional movement of the trailer.

1. **Hitching Procedure** – Turn the tongue jack crank clockwise (or operate power jack) to raise the tongue and coupler. Raise the tongue sufficiently to clear the hitch ball on the tow vehicle.
2. Back the tow vehicle slowly until the hitch ball is directly under the coupler ball socket. Keep body parts away from this area during this maneuver.

3. Be sure the coupler latch locking lever on the tongue is fully open. Lower the tongue jack until the ball is firmly seated in the socket. Close the coupler latch and secure it with a locking pin, bolt, or small padlock.



Coupler and Hitch Ball



Coupler Latched and Secured with Bolt

4. For **Weight Distributing Hitches** – Raise the tow vehicle and trailer with the tongue

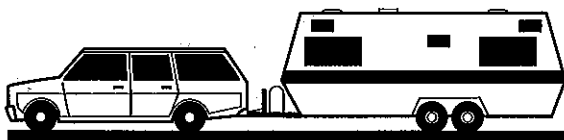
jack high enough to allow room to install the weight distributing hitch spring bars.

5. Attach the spring bars according to the hitch manufacturer's instructions.
6. After adjusting the spring bars, lower the jack, remove the foot, and fully retract the jack. Step back and check that the trailer is level from front to back. Do not permit the front of the trailer to be lower than the rear on tandem axle trailers; this reduces tongue weight and loads the front axle, reducing sway stability. Adjust the hitch ball height if necessary.

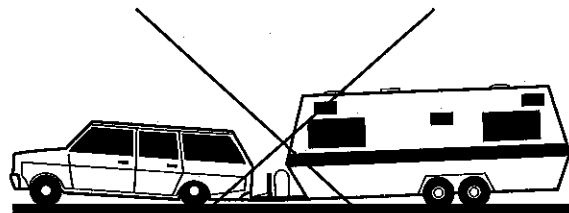
WARNING

Follow the hitch manufacturer's instructions for adjusting the weight distributing hitch. Overtightening of hitch spring bars will reduce cornering and stopping ability.

7. For **Sway Control Devices** – Adjust the sway control system according to the manufacturer's instructions.
8. **Hitching Procedure Continued** – Connect the safety chains. Loop each chain through a suitable attachment eye on the tow vehicle and insert the chain quick coupler through an appropriate chain link. Adjust each chain length so it is as short as possible, but still permits full turn angles without becoming tight. Both chains should be the same length and short enough to cradle the trailer's tongue off the ground if the



RIGHT

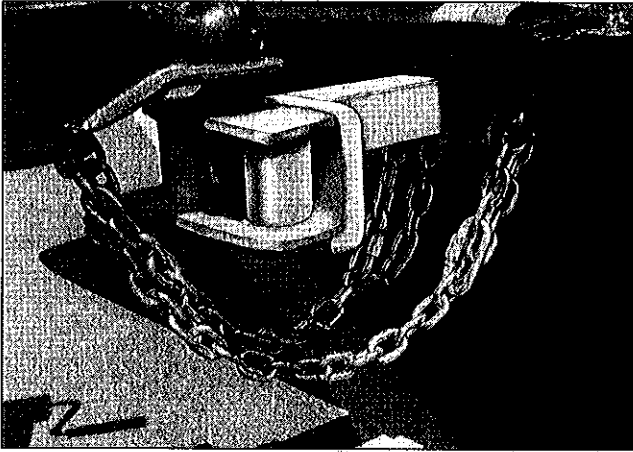


WRONG!

Spring Bar Adjustment

On The Road

trailer ever accidentally becomes uncoupled. Be sure to close the quick coupler by tightening the threaded connector.



*Safety Chain Hookup
(spring bars removed for clarity)*

WARNING

Never attach safety chains to the hitch ball or to any removable part of the hitch.

9. Connect the breakaway switch lanyard to an attachment eye on the tow vehicle. Be sure that the switch lanyard is adjusted so the switch is not activated during a full "jackknife" turn.

WARNING

Do not connect the breakaway switch lanyard to the hitch ball or to any removable part of the hitch.

Remember that the breakaway switch's emergency braking feature requires a fully charged battery on the trailer. This important safety item is required in most states.

10. Plug the 12-volt electrical cord into the mating tow vehicle socket.
11. Run an operational check of stop lights, turn indicators, running lights, and electric brakes before driving off. See *Braking System* in this chapter and *Electrical*

System chapter for more details about the electrical systems. Remove tire chocks.

12. Reverse the procedure for unhitching.

NOTE

After every trip both the pin and the coupler should be inspected for wear and tear or damage. If any excessive wear or cracking is observed, have the trailer inspected by a qualified professional and if necessary replace the affected parts.

ADJUSTABLE HEIGHT COUPLER (If Equipped)

Bolt Application

1. Fasten coupler to bracket with two 5/8" diameter bolts S.A.E. grade 8 and lock nuts or nuts and lock washers.
2. Torque bolts to 200-230 ft. lbs. (dry).
3. Retorque bolts after first two hours of service, then continue to follow maintenance schedule.

Latching Instructions

WARNING

PERSONAL INJURY.

Always open latch handle before inserting ball.

1. Insert finger in latch hole. Pull out and up on latch. Rotate latch 90° from original position.
2. Place coupler on 2-5/16" ball of same or greater capacity than trailer GVW (Gross Vehicle Weight.)
3. When ball is completely nested in ball socket, push forward on latch. Be sure that the tab on the latch is secured in slot.
4. Extend jack to ground and lift car/trailer combination 2" - 4" to insure coupler is securely attached to tow ball. Retract jack completely before towing

5. Insert padlock or bolt through lock hole in latch for theft protection.



NOTE

These couplers are not adjustable for ball size.

Maintenance

1. Lubricate ball socket and ball clamp with wheel bearing grease. Clean and lubricate monthly.
2. Check towing hitch, ball and coupler for signs of wear before each trip. Replace coupler if damaged or worn.
3. Lubricate moving or sliding parts monthly with S.A.E. 30 weight oil.
4. Should problems or questions arise, contact your dealer, the trailer manufacturer or Atwood Service Department at 815-877-5700. For warranty information contact Atwood before having any work done.

HITCHING PROCEDURE FOR FIFTH-WHEEL TRAILERS

Before attempting to hitch up your trailer, read the instructions provided by the hitch manufacturer. The following instructions are usable in most cases. If the instructions provided with your hitch differ from this procedure, follow the hitch manufacturer's instructions.

Hitching up is a two-person job. One person should drive the truck and the second person should act as a spotter to assist the driver when maneuvering the truck into position.



CAUTION

Although fifth-wheel trailers will not normally move when parked with the landing gear down it is highly recommended that wheel chocks be placed in front and rear of at least one tire to help prevent movement.

Always ensure that the trailer is stable before attempting to hitch up.

Determine the height of the receiver on the truck and use the landing gear to adjust the trailer to about the same level. A tape measure is a helpful tool. Adjust the height of the trailer pin box so that the loaded trailer is level when attached to the truck and ready to travel.

Both the truck and trailer should be on level ground. Connecting the receiver and pin box will be much easier if both height and side-to-side level are carefully matched.

Procedure for Hitching:

1. Raise or lower the front of the trailer so that the pin height closely matches that of the coupler assembly in the truck.
2. Open the coupler-locking device so that the pin can engage the hitch plate jaws.
3. Lower the truck tailgate.
4. Slowly back the truck towards the pin box until the pin and coupler are in close proximity and stop with the engine running, transmission in park and parking brake engaged.
5. Plug in the 12-volt electrical cord to the mating receptacle in the truck bed.
6. Raise or lower the trailer pin box to match the coupler.
7. Continue backing and engage the king pin and coupler completely.
8. Close the couple-locking device, engage the safety latch and install security pin (or lock)
9. To ensure the system is fully engaged and locked, move truck slightly tugging forward a few inches to confirm the trailer has resistance to motion.
10. Raise the fifth-wheel landing gear and remove any tire chocks.
11. Connect the breakaway switch lanyard. Be sure the lanyard is adjustable so that

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the switch is not actuated during a full “jackknife” turn.

12. Close the truck tailgate.
13. Run on operational check of stoplights, turn signals, running lights, and electric brakes before driving off. See *Braking System* in this chapter and *Electrical System* chapter for details.

✓ NOTE

Periodically check pin box adjusting bolt torque with a torque wrench. Torque to 150 ft.-lbs.

CAUTION

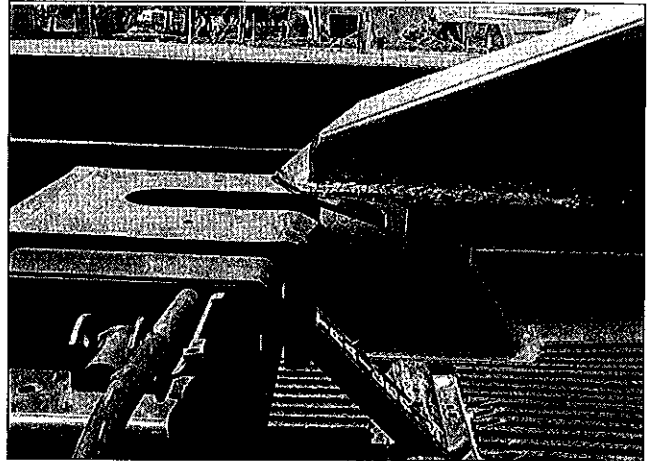
Damage will occur to your truck and/or trailer if you fail to lower the truck tailgate prior to hitching or fail to raise the truck tailgate after hitching.

Procedure for Unhitching:

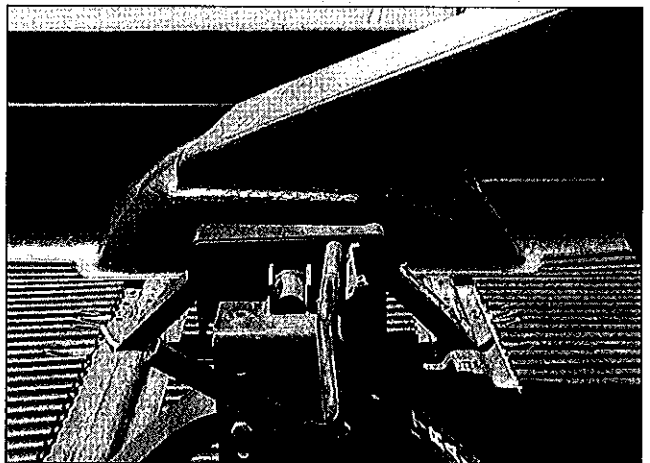
1. Identify a flat and level location to unhitch and position the trailer.
2. Position wheel chocks to at least one tire location both in front and rear of the trailer tire(s).
3. Raise landing gear until the truck bed is unloaded and the pin box is free.
4. Disconnect the breakaway switch, 12-volt electrical cord and lower the tailgate.
5. Open the coupler-locking device so that the pin can disengage the hitch plate jaws.
6. Slowly move the truck forward ensuring the trailer and cords are clear. Once free raise the tailgate to the locked position.
7. Add lubricant/grease to the coupler locking device and pin. This will keep the parts rust free and ready for the next use.

✓ NOTE

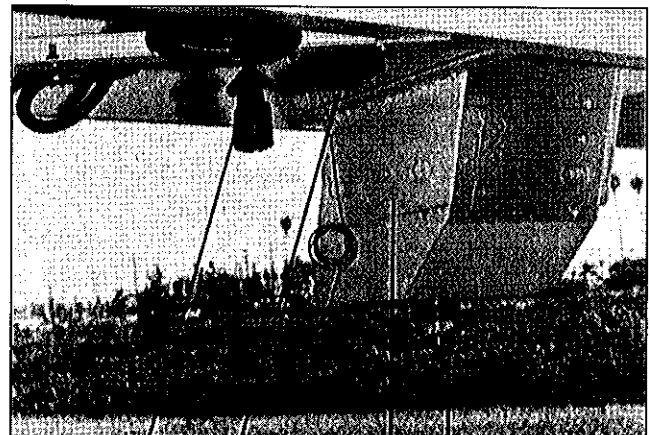
After every trip both the pin and the coupler should be inspected for wear and tear or damage. If any excessive wear or cracking is observed, have the trailer inspected by a qualified professional and if necessary replace the affected parts.



Fifth Wheel King Pin Prior to Engaging to Coupler



Fifth Wheel King Pin Engaged to Coupler



- | | | | |
|--------------------------|---|-----------------------|---|
| 1 | 2 | 3 | 4 |
| 1. 12 volt electric cord | | 3. Adjustable pin box | |
| 2. Breakaway switch | | 4. King pin | |

Fifth-Wheel Pin Box

BRAKING SYSTEM

The electric brakes on your trailer are similar to the drum brakes on many cars and trucks. The basic difference between them is that your trailer brakes are operated by 12-volt DC power from the tow vehicle, rather than by hydraulic action. The brakes have been factory-calibrated for smooth, positive response. During break-in, they may squeak; this is normal and should cease after a few miles of wear.

Brake System Components

The brake system on your trailer consists of several major components, all of which must function properly for safe braking.

- **Tow Vehicle Battery** – The tow vehicle is the primary electrical power source for the trailer braking system. The connection is made at the positive post of the battery, or at the tow vehicle starter solenoid battery terminal.
- **Brake Controller** – The brake controller is not supplied with your trailer. The electric trailer brakes are automatically applied by the brake controller, which is mounted within easy reach of the driver. This controller is connected to the tow vehicle’s brake system and is actuated whenever the tow vehicle’s brakes are applied. It may also be used to manually apply the trailer’s brakes to control sway (see section on *Safe Driving Rules* in this chapter). The controller should have an adjustment for its engagement point; it is best to have the trailer brakes start acting slightly before those of the tow vehicle. This is called brake “lead.” This causes the trailer to pull against the tow vehicle, keeping the two vehicles in alignment. This is particularly important during rainy weather or whenever the road surface is slippery. If the tow vehicle sets its brakes first, the trailer will tend to push the tow vehicle and possibly “jackknife.” You may also need a resistor to

keep trailer braking force low enough to prevent wheel lockup. Consult your controller instructions for further information and wiring instructions.

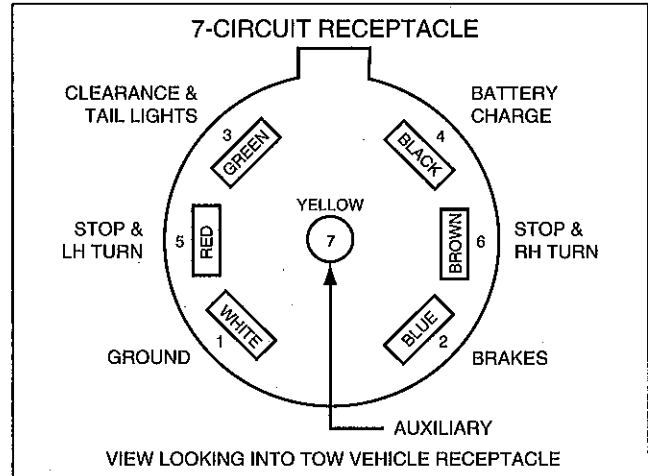
✓ **NOTE**

The brake controller is not supplied with your trailer.

⚠ **WARNING**

Do not install a fuse in the circuit between the tow vehicle battery and the brake controller. A blown fuse would cause the controller to cease operating both automatically and manually, causing loss of trailer braking with no advance warning.

- **Connector Plug** – The multi-pin cord connector at the front of the trailer transfers electrical power from the tow vehicle’s battery to the trailer brakes, exterior lighting system, and trailer battery.



Brake System Connector Plug

Keep the plug clean, tight, and protected from the elements. Inspect it carefully every time you hitch up. Be certain that your installation includes a “charge line” from the alternator on the tow vehicle to terminal number four on the tow vehicle’s connector receptacle. This wire should be 10-gauge stranded copper with insulation

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rated for underhood temperatures. A 30-amp circuit protector should be installed near the alternator connection. This circuit will keep the trailer battery charged as you travel. See *Electrical Systems* chapter.

- **Trailer Battery** – The trailer battery provides power to activate the brakes in case of an emergency where the trailer becomes unhitched during towing.



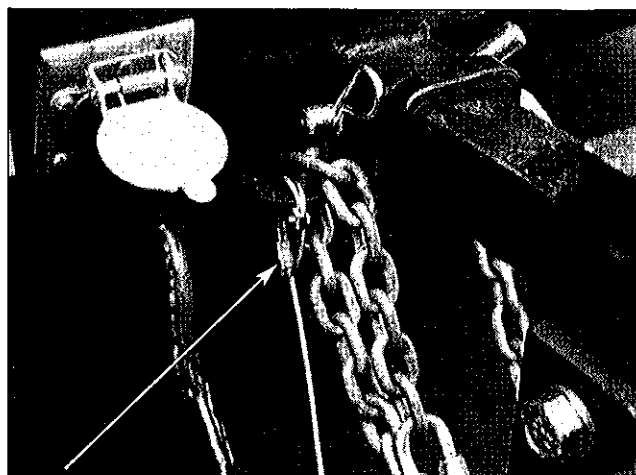
NOTE

The battery is not supplied by the trailer manufacturer.

- **Breakaway Switch** – The breakaway switch is located on the trailer tongue. This important safety item is required in most states. It has a steel cable (lanyard) fastened to it which will reach to the frame of the tow vehicle. This device is one of the most vital components on your trailer's braking system. It automatically applies the trailer brakes if the tow vehicle and trailer become uncoupled while in motion. The breakaway switch operates when a pull pin linked by the cable to the tow vehicle is separated from the switch. When the switch closes, power for brake application is transferred from the onboard trailer battery. The steel lanyard must be anchored to the tow vehicle when the trailer is hitched up. Secure this cable loop to the permanent frame of the tow vehicle, or a part of the hitch that is non-removable. **Do not fasten the breakaway switch lanyard to the hitch ball or any other removable part of the hitch.** Remove the pull pin every three months and lubricate it with light oil. Before reinserting the pin, spray the inside of the switch with an electrical contact cleaner to prevent corrosion.

Test the breakaway switch operation before each trip as follows:

1. Hitch the trailer to the tow vehicle.
2. Pull out the breakaway switch actuating pin.



Lanyard Attachment for Breakaway Switch

3. Test brakes by attempting to drive away. The breakaway switch is functioning properly if the trailer brakes are activated.
4. If the brakes are not activated, check that the trailer battery is connected and fully charged, and the trailer brakes are properly adjusted.
5. Obtain service repair if the trailer brakes do not operate after making these checks.
6. Reinsert the breakaway switch actuating pin before towing the trailer.

WARNING

Do not tow a trailer with a malfunctioning breakaway switch, or a dead or missing battery.

WARNING

Do not leave the pull pin out of the breakaway switch for more than a few minutes, or the battery will be drained. Do not use the breakaway switch for a parking brake.

- **Trailer Brakes** – Your trailer brakes are actuated by electrical energy from the brake controller. The greater the braking effort from the brake controller, the greater the braking force applied to the trailer brakes. The trailer brakes are also actuated

by the breakaway switch in case the tow vehicle and trailer become uncoupled. To insure brakes are in good working order, brakeshoes and drums should annually be checked for wear.

- **Grounding** – The electrical circuit that operates your trailer brakes can be reliably completed only by proper grounding back to the tow vehicle. **A poor ground circuit from the brakes to the tow vehicle battery can hurt braking performance as much as a poor primary circuit from the battery to the brakes.** Do not rely on the hitch ball/coupler for a good ground. Run a separate ground wire from the cord receptacle to the tow vehicle negative battery post, or to the tow vehicle frame. The ground conductor must be the same wire size as the charge line (10-gauge minimum).

Braking Tips

- *Before moving your trailer, inspect all external braking system components. Inspect all wiring connections. Test the breakaway switch as outlined above.*
- *Never use the trailer brakes alone for extended periods. They are designed to stop the trailer, not the tow vehicle. This action places excessive loads on the brakes, causing overheating, fading, and premature wear.*
- *Never use the tow vehicle brakes alone. The added weight of the trailer will more than double the load on the tow vehicle brakes, causing overheating, fading, and premature wear. Driving control can also be affected, due to the force of the trailer pushing against the tow vehicle. On slippery road surfaces this can result in “jackknifing.”*
- *Always use the automatic brake controller. This synchronized braking system allows you to drive in the manner recommended by experts: both hands on the steering wheel. The brake controller is properly*

adjusted when the trailer brakes slightly “lead” the tow vehicle brakes. This will help keep the vehicles aligned for a safe, straight stop.

- *Downgrades and curves require reduced speeds. A downgrade will require lower transmission gears and slower speeds to keep the brakes from overheating.*
- *Rain or slippery conditions require reduced speeds. Whenever in doubt, reduce your vehicle speed to ensure predictable, safe operation.*

TRAILER LOADING

Before discussing loading and weighing, we need to explain some common weight terms. We’ll use abbreviations in our discussion. These terms are:

GVWR (Gross Vehicle Weight Rating)

is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin.

GAWR (Gross Axle Weight Rating)

is the maximum weight a specific axle is designed to carry.

GCWR (Gross Combination Weight Rating)

is the value specified by the tow vehicle manufacturer as the maximum allowable loaded weight of the tow vehicle with its towed trailer or towed vehicle.

UVW (Unloaded Vehicle Weight)

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

CCC (Cargo Carrying Capacity)

is equal to GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater), and full LP Gas weight.

On The Road

A trailer chassis (suspension, wheels, tires, axles, frame and tongue) is designed to carry a certain maximum load. This load consists of the empty trailer itself, plus weight added in the form of water, food, clothing, and anything else that may be stored in or attached to the trailer. The maximum load for which the trailer is designed is called the *Gross Vehicle Weight Rating (GVWR)*, and is the total of the weight on the axles and the weight on the trailer tongue or fifth-wheel king pin.

Another critical weight factor is the *Gross Axle Weight Rating (GAWR)*. This is the maximum weight a specific axle is designed to carry. Again, the rating represents the empty vehicle's axle weight plus the maximum added load. On trailers with more than one axle, the weight is divided between each axle and each has its own GAWR. The total of all axle loads plus the tongue weight must not exceed the GVWR.

The tires equipped with your trailer are designed to carry the loads specified. Tires need to be of sufficient capacity to carry the load. Always maintain required tire pressure by checking frequently. Never replace or mix tires with a lower capacity specification.

In addition to knowing the overall weight that can be safely loaded in or attached to the trailer, you must know how to distribute this weight so that correct amounts of weight are placed on the axles and tongue.

Proper weight distribution for a tandem axle conventional trailer should have 9% to 15% of the loaded trailer weight on the tongue. Single axle trailers should have at least 10% to 15% on the tongue. Depending on your tow vehicle, the preferred weight on the tongue for conventional trailers is 11% to 12%. Fifth-wheel king pin weights should be 15% to 25% of the loaded fifth-wheel weight.

Proper weight distribution is required for towing stability and will assure that the trailer is not rear, front, or side heavy. A light tongue weight or heavy weights placed at the rear end of the

trailer may cause sway. On the other hand, too much weight on the tongue can overload the tow vehicle and cause poor tow vehicle braking, poor steering, poor cornering, and can damage the trailer frame.

Your trailer is designed for maximum tongue weights and hitch spring bar ratings according to the following chart (not applicable to fifth-wheel models):

TONGUE TYPE AND SIZE	MAXIMUM ALLOWABLE LOADED TONGUE WEIGHT	MAXIMUM ALLOWABLE HITCH SPRING BAR RATING
4 inch channel	750 lbs.	750 lbs.
5 inch channel	1100 lbs.	1000 lbs.
6 inch channel	1200 lbs.	1200 lbs.
4 inch tube	650 lbs.	550 lbs.
5 inch tube	900 lbs.	750 lbs.

WARNING

Do not exceed the specified tongue weight or spring bar rating. Damage to the trailer frame and poor handling and braking may result.

Determining and Distributing Your Trailer's Load

The Gross Vehicle Weight Rating (GVWR) and the Gross Axle Weight Rating (GAWR) for your trailer are found on the label attached at the front road side of the trailer. You must compare the GVWR with the actual loaded weight of your trailer. If the loaded weight of your trailer exceeds the GVWR, your trailer is overloaded and you will have to remove items to bring the weight below the GVWR. Follow the method outlined here to determine the weight and weight distribution of your trailer. Use the *"Trailer/Tow Vehicle Load Worksheet #1"* (found toward the back of this manual) to calculate and record the tow vehicle/trailer loading figures. When weighing your trailer or tow vehicle always use a platform scale such as those used by trucking companies or highway weigh scales. The weigh station attendant can guide you through the correct positioning of the trailer and tow vehicle onto the scales.

1. **Weigh the trailer by itself.** After driving the tow vehicle and trailer onto the scale, disconnect the trailer from the tow vehicle and move the tow vehicle off the scale. The measured weight of the loaded trailer must not exceed the GVWR of the trailer. If the GVWR is exceeded cargo or equipment items must be removed. This can be recorded as the **1st scale reading on worksheet #1.**
2. **Find the tongue weight.** When the total trailer weight is under the rated GVWR, you next determine the trailer pin or tongue/coupler weight. Re-hitch the truck to the trailer. Move the trailer until the pin or tongue is off the scales. Ensure system is level. Read the 5th wheel or trailer weight on the axles alone. This can be recorded as the **2nd scale reading on worksheet #1.** Subtract weight on the axle(s) from the total weight. This weight difference will be the approximate pin or tongue weight. **Use lines below box 3 on worksheet #1.**
3. **Calculate the percentage tongue weight.** Divide the loaded tongue weight by the total loaded trailer weight. Multiply this result by 100. This will tell what percent of the total weight the pin or tongue is carrying. You need to know this to properly load your tow vehicle. If the tongue weight exceeds the proper range for your trailer, shift some of the load rearward to arrive at the proper load. If the tongue weight is below the proper range, move some of the load forward. If you have to shift the load to get the proper pin or tongue weight, check to be sure that you do not exceed the weight rating of the axle(s), tire(s), tongue, or hitch.

$$\frac{\text{Loaded Tongue Weight}}{\text{Tongue Weight \%}} = \frac{\text{Loaded Tongue Weight}}{\text{Loaded Trailer Weight}} \times 100$$

Recommended Weight Distribution

	Minimum	Maximum
Trailer (Tandem Axle)	9%	15%
Trailer (Single Axle)	10%	15%
Fifth-Wheel	15%	25%

CAUTION

Weight Distributing Hitches

A weight distribution hitch will change the weight distribution on the trailer and tow vehicle axles. If used, it is recommended that the trailer and tow vehicle be re-weighed to ensure that weight ratings are not exceeded.

4. With the trailer attached to the tow vehicle each wheel position should be weighted separately (see the "Trailer/Tow Vehicle Load Worksheet #2") to be sure individual axles and tires are not overloaded. If an overload condition exists on any axle or wheel position, trailer loading must be redistributed or removed. If an overload situation is not corrected, tire or mechanical failures may occur.

The individual wheel positions (particularly the rear positions) on the towing vehicle should also be weighed for possible overload while the trailer remains attached.

1. To Obtain Individual Axle Weights, Gross Weights (Tow Vehicle) and Gross Combined Weight (Travel Trailer Plus Tow Vehicle):

- a. Drive onto the scale loaded with all supplies, passengers, and equipment. Take a weight reading as the front axle of the tow vehicle comes onto the scale. It must not exceed the tow vehicle's front GAWR. This can be recorded as **entry 1a on worksheet #2.**
- b. The second reading includes the total tow vehicle weight and a portion of the hitch load with the trailer connected. This weight must not exceed the tow vehicles GVWR. This can be recorded as **entry 1b on worksheet #2.**
- c. Subtract the first reading from the second reading. The difference is the weight on the tow vehicle's rear axle. This must not exceed the tow vehicle's rear GAWR. This can be calculated and recorded as **step 1c on worksheet #2.**

2. To Obtain Individual Wheel Position Weights (Tow Vehicle):

- a. Place the right front tire of the tow vehicle on the scale and take a weight reading. This can be recorded as **entry 2a on worksheet #2**. Subtract this from the weight of the front axle to get the left front tire weight. This can be calculated and recorded as **calculate other side weight on worksheet #2 under step 2a**.
- b. Place both right side tires on the scale and take a weight reading. This can be recorded as **entry 2b on worksheet #2**.
- c. Subtract the weight of the right front tire from the weight of the right side of the tow vehicle to find the weight on the right rear tire. This can be calculated and recorded as **step 2c right rear on worksheet #2**.
- d. Subtract the weight of the right rear tire from the weight of the rear axle to get the weight of the left rear tire. This can be calculated and recorded as **step 2c left rear on worksheet #2**.
- e. Compare the weight on each tire to the tire load rating. The weights on the tires must not exceed the tire rating. **Places to record the tire load rating at inflation are on the worksheet #2.**

3. To Obtain Individual Axle Weights (Travel Trailer):

- a. Place all of the trailer axles on the scale and record the weight. This can be recorded as **entry 3a on worksheet #2**.
- b. Pull the trailer forward until the rear most axle is on the scale and the forward axle is off the scale. Record the weight of the rear axle only. This can be recorded as **entry 3b on worksheet #2**.
- c. The difference between these two weights is the weight on the front

axle. This can be calculated and recorded as **step 3b front axle on worksheet #2**.

- d. Compare the weight of each axle to the gross axle weight rating. The weight on either axle must not exceed its GAWR.

4. To Obtain Individual Wheel Position Weights (Travel Trailer):

- a. Place the right side tires of the trailer on the scale and take a weight reading. This can be recorded as **entry 4a on worksheet #2**. Subtract this from the axle weight of both axles recorded as entry 3a to get the left side weight. This can be calculated and recorded as **calculate other side weight on worksheet #2 under step 4a**.
- b. Pull forward until only the right rear trailer tire is on the scale and take a weight reading. This can be recorded as **entry 4b on worksheet #2**. Subtract this from the weight of the rear axle recorded as entry 3b to get the left rear tire weight. This can be calculated and recorded as **calculate other side weight on worksheet #2 under step 4b**.
- c. Subtract the weight of the right rear tire from the weight of both right side tires to find the right front tire weight. This can be calculated and recorded as **calculate right front weight on worksheet #2 under step 4b**.
- d. Subtract the weight of the right front tire from the front axle weight to find the left front tire weight. This can be calculated and recorded as **calculate left front weight on worksheet #2 under step 4b**.
- e. Compare the weight on each tire to the tire load rating. The weights on the tires must not exceed the tire load rating. **Places to record the tire load rating at inflation are on worksheet #2.**

5. To Obtain Gross Combination Weight:

- a. Copy scale weight from step 1b.
- b. Copy scale weight from step 3a.
- c. Add both scale readings to obtain the gross combined weight. This can be calculated and recorded as **calculate gross combined weight on worksheet #2 and under step 5c.**
- d. Compare this weight to the GCWR of the tow vehicle. The GCW must never exceed the GCWR of the tow vehicle.

CAUTION

Tire Load Rating's

Tire load ratings are dependent on the tire inflation pressures. Please refer to the tire manufacturers inflation charts. Under inflated tires can be damaged and result in a loss of inflation pressure.

Remember that your tow vehicle is an integral part of your total towing combination. Weigh and load it with the same considerations as the trailer. Gross weight and axle weight ratings will be found on tags on the driver's door pillar or inside the glove compartment door. Consult your tow vehicle *Owner's Manual* or *Towing Guide* for more information. If you do not have a towing guide, you should request one from the tow vehicle manufacturer.

Your trailer contains an information sheet listing your trailer's GVWR, approximate *Unloaded Vehicle Weight (UVW)*, and approximate *Cargo Carrying Capacity (CCC)*. A sample of this form may be found at the back of this manual. The UVW and CCC are calculated from typical trailer weights. Due to variations in materials and in manufacturing, your actual trailer weights may differ.

Please note that the stated CCC may be limited by the tow rating of your tow vehicle. Ask your tow vehicle dealer for more information about tow ratings.

✓ **NOTE**

Periodically reweigh your travel trailer and tow vehicle. Different traveling configurations may change your loading and weight distribution.

! WARNING

Do not exceed the rated load of the tow vehicle, the trailer, or the rated capacity of any axle or tire.

✓ **NOTE**

If other equipment or options such as leveling jacks, awnings, roof storage pods, etc., are installed after the trailer leaves the factory, the weight of these items must be subtracted from the load and cargo carrying capacity.

How Overloading Affects Your Tires

The results of overloading can have serious consequences in terms of passenger safety. Too much weight for 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. 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 the tire, its load range and corresponding inflation pressure. Excessive loads and/or under inflation cause "tire overloading." As a result, abnormal tire flexing occurs, which can generate an excessive amount of heat within the tire. Excessive heat may exceed the tire's capabilities, which may lead to tire failure. It is the air pressure which enables a tire to support the load, so proper inflation is critical.

Since RVs can be configured and loaded in many different ways, air pressures must be determined from the actual loads (determined by weighing) and taken from the load and inflation tables pro-

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vided 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, lighten the load or install tires with a higher carrying capacity.

Note: Installing tires with a higher carrying capacity only solves the problem of tire overload. It has no effect on the over-loading of other components (i.e., rims, axles, shocks or bearings). Rims may not be capable of withstanding the higher pressures necessary to support the load. If the load cannot be adequately reduced, contact the RV manufacturer for advice.

If you decide to install a tire size other than that originally provided on the vehicle, care must be taken to ensure adequate load-carrying capacity and compatibility between the tire and rim.

If you have operated your vehicle with an under inflated tire, promptly have it removed from the wheel for a complete internal inspection to be sure it is not damaged. Tires driven even short distances while under inflated may be damaged beyond repair.

Tires should be inspected regularly for excessive or irregular tread wear, bulges, aging, fabric breaks, cuts or other damages. Remove any nails, stones, glass, etc., embedded in the tread to prevent damage. Even minor damage can lead to tire failure. Replace tires when the tread is worn to 2/32" depth remaining in two or more adjacent grooves.

WARNING

There is a danger of serious injury or death if a tire of one bead diameter is installed on a rim or wheel of a different rim diameter. Always replace a tire with another tire of exactly the same bead diameter designation and suffix letters.

Loading Tips

After you have determined how much weight you can carry and selected those items to make up that weight, make a list and keep it for future reference. Load the trailer so that you get proper weight distribution on the axles and tires. Make a loading diagram representing your properly loaded trailer. It will help you locate where specific items are stored and will help speed the loading process.

Secure and brace stored items so they won't move during travel. Do not load heavy items near either end of the trailer or on the rear bumper. Adjust cargo to keep the side to side tire loads as equal as possible.

CAUTION

Do not install any type of weight carrying rack, frame, or hitch to the rear bumper, front A-frame assembly, chassis or body component of the trailer unless specified by the trailer manufacturer. Damage to the trailer body and unstable handling characteristics may result. Add-ons to the rear bumper, front A-frame assembly or the chassis could void your warranty on structural components.



NOTE

Use extra care in packing and storing dishes, utensils, and foods in rear-kitchen models.



WARNING

Exceeding the GAWR or GVWR of your tow vehicle or trailer can cause undesirable handling characteristics and may create a safety hazard. Modification of your vehicle by the addition of racks not specified by the manufacturer to carry additional equipment or vehicles is not recommended, may create a safety hazard, and may void your warranty.



WARNING

Do not store or carry LP gas containers, gasoline, or other flammable liquids inside your trailer.

Bicycle Hitch Receiver (If Equipped)

The bicycle hitch receiver is limited to a 90 pound load (including the bicycle rack and bicycles).

Cargo Carrying Capacity

During the design and development of your trailer, the number and size of storage compartments and the liquid tank capacities are maximized for value and convenience. If the trailer operator fills all liquid tanks to capacity, and fills all storage compartments and cupboards to maximum volume with heavy items, the trailer could potentially be overloaded. The operator is responsible for analyzing the conditions under which the trailer will be used for each trip.

Thoughtful consideration of the weight placed in the trailer can yield important benefits:

- Maximum flexibility in the use of the available storage space provided in the trailer;
- Improved tow vehicle/trailer handling characteristics;
- Better tow vehicle fuel mileage and reduced tire wear.

SAFE DRIVING GUIDELINES

Fleetwood *does not* recommend transporting passengers in your trailer while traveling.

Your tow vehicle will have very different handling and stopping characteristics when it is towing a trailer. The following guidelines will help you develop needed driving skills for safe trailer towing:

- **Travel very slowly** if you are new to trailer towing, or if you have a new trailer or tow vehicle, until you have learned the handling and stopping characteristics of the tow vehicle/trailer combination. Practice turning, stopping, and backing in a secluded place away from traffic.

- **Do not permit a driver who is inexperienced at towing to operate your tow vehicle/trailer combination without your direct supervision.** Remember – it's slow speed for beginners.
- **Tow at moderate speeds** allowing for adverse highway and wind conditions. Even under the best of conditions, do not exceed posted speed limits for vehicles towing trailers. As speed increases, trailer sway stability, stopping ability, and the ability to make emergency maneuvers are greatly reduced.
- **Reduce speed before starting down hills** – even short ones – and avoid heavy tow vehicle braking on downgrades. Trailer towing stability is reduced when traveling downhill, and is further reduced by tow vehicle braking.
- **Slow down before entering turns** and avoid heavy braking in turns. Trailer stability is reduced in turns, and the weight of the trailer tends to push the back of the tow vehicle outward in turns, which can cause loss of control and “jackknifing.”
- **If it is windy or passing vehicles are affecting the trailer, slow down** until full, comfortable control can be maintained. Trailer sway can be started by crosswinds and the wind from passing vehicles, especially trucks and buses passing from the rear. Reduced speed improves trailer stability and handling.
- **Do not use an automatic speed control while towing.** These devices can interfere with your ability to slow down in an emergency.
- **Avoid quick steering movements** that can start the trailer swaying.
- **Close, lock and deadbolt** the entry door and secure all windows and slide-outs before traveling.
- **Plan your trip and map out the roads you plan to use.** Find out the grade of the area you will be traveling in. Some moun-

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tain passes have extreme conditions in elevation grade and curves you may prefer to avoid.

- **Rain or snow/ice conditions require extreme caution when towing.** Vehicle speeds should be reduced and in some cases, towing should be avoided.
- **Maintain at least twice the normal stopping distance while towing your trailer.** The increased weight of the combination of vehicles requires greater stopping distances.
- **Use lower gears on long grades.** Downshift on upgrades to avoid overheating or undue engine loads. Downshift on downgrades to allow engine braking to assist in controlling vehicle speed. Avoid continuous or frequent brake application. The weight of the combination of vehicles can cause brakes to overheat and fade.
- **Allow ample time for passing.** Your acceleration will be much slower and your combination of vehicles is much longer than the tow vehicle alone.

If the Trailer is Swaying

- ***Steer as little as possible while maintaining control of the vehicle. Because of your natural reaction time lag, quick steering movements to counter trailer sway can actually cause increased sway and loss of control. Try to hold the wheel as straight as possible until stability is regained.***
- ***Slow down but avoid strong tow vehicle braking. Reduce speed gradually whenever possible. Use the hand control to gradually apply the trailer brakes; this will help keep the vehicles aligned. Tow vehicle braking reduces trailer stability, and sliding tow vehicle tires causes loss of control and jackknifing.***
- ***If a reduction in trailer stability has occurred, slow down immediately and stop as soon as possible. Check tire pressures, sway control adjustment, hitch spring bar***

adjustment, cargo weight distribution, and look for any signs of mechanical failure. Until the problem has been identified and corrected, travel at reduced speeds that permit full control.

Once you become accustomed to the feel of your tow vehicle/trailer combination, you will find towing your trailer comparable to driving your family car. Become familiar with the position of the trailer in traffic, and be cautious when maneuvering to allow for its length and width. Always allow extra room to corner and to change lanes. Learn to use the side mirrors to view the road behind and to the sides. Check them often.

Allow for the extra height of your trailer and avoid areas having low overhead clearance. Check for low hanging tree branches or other obstructions whenever you drive, park, or when pulling in for fuel or service. Always check overhead clearances of overpasses and bridges. This may be particularly important if you drive with the roof vents open or if the trailer is equipped with a roof air conditioner, roof rack, or antennas.

BACKING UP

Place your hand at the bottom of the steering wheel. The back of the trailer will move in the same direction that your hand moves. The rear of the tow vehicle will go the opposite way you want the trailer to turn. Be careful as the trailer/tow vehicle angle gets large; the hitch and/or tow vehicle and trailer may be damaged by jackknifing.

You will need a much greater turning radius than the tow vehicle itself requires. When backing, be sure to watch not only the rear, but also both sides of the tow vehicle.

Before backing up, you should designate a person to 'spot' you to ensure that you will not bump the trailer into anything out of your field of view.

In time, and with a little practice, you will be able to back your trailer with little effort. Always

be aware that you have poor visibility to the rear. Someone standing safely outside at the rear of the trailer to guide you can assist you in safe backing. Use both rear view mirrors when backing.

If you are in any doubt, stop, place the vehicle in park, shut the engine off and go look for yourself at the trailer to ensure it is going where you intend it to go.

WARNING

Ensure that small children are not present anywhere near your trailer when backing up.

PARKING

When parking parallel to a curb, be sure to allow for poles or other obstructions beyond the curb as the front and rear portions of the trailer swing wider than the tow vehicle's body. Always shift the transmission to PARK ("P") with automatic transmissions, or low or reverse with manual transmissions, and set the parking brake when parking.

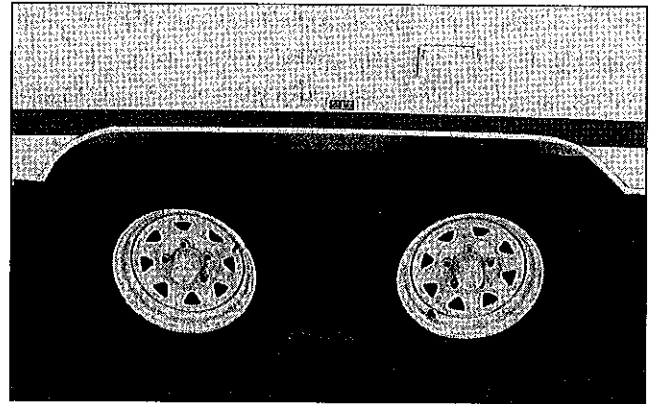
Parking On a Grade

Try to avoid parking vehicles with trailers on a grade or hill. However, if you must park on a grade, follow these steps:

1. Apply and hold the tow vehicle brakes.
2. Have someone place wheel chocks under the trailer wheels.
3. When the wheel chocks are in place and the assistant is clear, release the tow vehicle brakes until the chocks absorb the load.
4. Apply the tow vehicle parking brake.
5. Shift the transmission to "P" (PARK), with automatic transmission or low or reverse with manual transmissions.

If the vehicle is parked on a grade, don't shift the transmission to "P" (PARK) until the trailer wheels are chocked and the tow vehicle parking brake is set. If you do, the

weight of the vehicle and trailer may put so much strain on the transmission that it may be hard to shift out of "P" (PARK).



Wheel Chocks

When starting after being parked on a grade:

1. Apply and hold the tow vehicle brakes.
2. Start engine in "P" (for automatic transmission) or neutral with the parking brake set for manual transmissions.
3. Shift into gear and release the tow vehicle parking brake.
4. Release the tow vehicle brakes and move the trailer until the chocks are free.
5. Apply and hold the tow vehicle brakes and have an assistant remove the chocks.

TIRES

Your trailer is equipped with quality tires made by a major tire manufacturer. Under normal circumstances and with proper maintenance, you should receive thousands of miles of trouble-free service. For safety, trailer stability, and maximum tire life, vehicle speeds must be proper, proper inflation pressure must be maintained, and tread depth and wear must be monitored. Properly inflated and maintained tires also contribute to overall trailer stability and safety. Refer to tire manufacturer's information provided in your *Owner's Information Package* for information on maintenance and tire care. If no information is provided, please contact your local tire manufacturer's location for advice.

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The maximum cold inflation pressure is stamped on the tire sidewall. Always inflate the tires to this maximum pressure.

Be sure that an accurate tire gauge is part of your tool kit. Check the pressures in the morning before starting out, when the tires are cold. Don't forget the spare! Do not bleed air out of warm tires. Inflation specifications are for cold tires.

WARNING

Check tire pressures before travelling. Always check pressure when tires are cold. Do not exceed maximum recommended pressure.

WARNING

Keep tires properly inflated. A tire that is run long distances or at high speeds while seriously under-inflated will overheat to the point where the tire may lose air suddenly and/or catch fire, possibly resulting in damage to the vehicle and its contents and /or personal injury.

WARNING

All your trailer tires should be the same type, size, and construction — do not mix bias-belted and radial tires.

If You Get a Flat Tire

In case of sudden tire failure,

- ***Avoid heavy brake application***
- ***Gradually decrease speed***
- ***Hold the steering wheel firmly and move slowly to a safe place off the road***
- ***Park on a firm, level spot***
- ***Turn off the ignition***
- ***Turn on the hazard warning flasher system.***

Changing a Flat Tire

Should you experience a flat tire, it is recommended that you summon professional help through your auto club road service, or a local tire service facility.

WARNING

To avoid personal injury and/or property damage if a blowout or other tire damage occurs, obtain expert tire service help. Do not attempt to change the tire yourself. Do not reinflate a tire that has been flat or is seriously low on air. Have the tire removed from the wheel and checked for damage. Never add air to tires unless an accurate pressure gauge is used.

WARNING

DO NOT crawl under or place any part of your body under an RV that is being lifted.

WHEEL LUG NUT TORQUE AND TIGHTENING INTERVALS

Proper wheel lug nut torque is very important to safe and dependable trailering. The wheel and axle systems used in trailers are similar in many ways to those used in cars and trucks. These differences require special attention to wheel lug nut torque, both while the trailer is new, and throughout the trailer's life.

Trailer wheels may carry higher loads per wheel than passenger car or truck wheels. Each wheel may carry from 1000 to 2500 pounds. Furthermore, wheels on tandem axle trailers do not steer, and are subjected to high side load stress whenever the trailer makes a tight turn. When you go around corners — especially slow, tight ones — the wheels on your trailer are subjected to these side loads. This tends to flex the wheel and may gradually loosen the wheel lug nuts.

It is critical that the wheels be properly torqued during the first 10, 25 and 50 miles of road operation. Although the wheels have been properly torqued before leaving the manufacturing plant, settling and wearing in of components during the first few miles of operation may cause some loosening of the wheel lug nuts.

A torque wrench with adequate accuracy is available at most automotive tool stores. Use of a torque wrench can also reduce the effort required to tighten the wheel lug nuts.

Before each trip and any time a wheel is replaced, be sure to tighten the wheel lug nuts, following the sequence shown in the diagram, to the specified torque. If the wheel was replaced, check the torque again after 10, 25 and 50 miles. If you notice wheel wobbling or hear a rattling sound coming from a wheel, especially at low speeds, a wheel lug nut may have come loose.

This problem is usually caused by improper tightening or by faulty or damaged lug bolt threads. If you have reason to believe a lug nut has come loose, **safely stop the vehicle at the side of the road as soon as possible**. Put up warning devices. Remove the hub caps or wheel covers, if equipped and check the tightness of all the wheel lug nuts. Tighten all lug nuts to the specified torque ft./lbs. If lug bolt threads are damaged or faulty, get professional service help. **Do not tow the trailer with missing lug nuts or faulty lug bolts.**

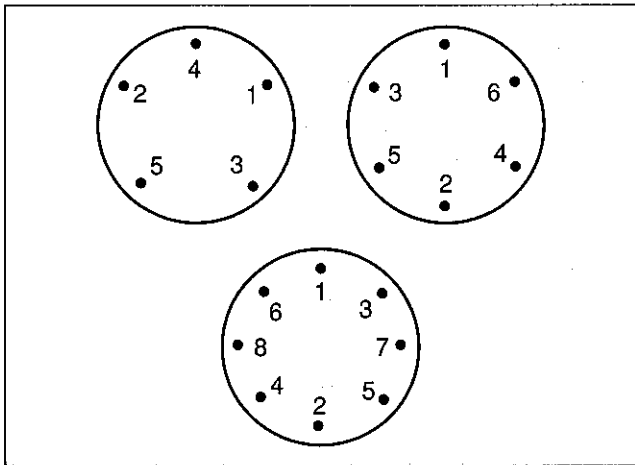
WARNING

If not properly tightened, loose lug nuts can damage the stud and/or wheel. If driven in this condition for any extended period, severe wheel damage could occur affecting the handling of your trailer.

Steel and Aluminum Wheel Lug Nut Torque Specifications

WHEELS	TYPE	SIZE	RECOMMEND TORQUE
Steel Wheel 13 x 4.5 x 545 AW	Spoke	13	80 - 90 Ft./Lbs.
Steel Wheel 14 x 5.5 x 545 AW	Spoke	14	80 - 90 Ft./Lbs.
Steel Wheel 15 x 5 x 545 AW	Spoke	15	80 - 90 Ft./Lbs.
Steel Wheel 15 x 6 x 655 AW	Spoke	15	90 - 100 Ft./Lbs.
Steel Wheel 16 x 6 x 655 AW	Spoke	16	90 - 110 Ft./Lbs.
Aluminum Wheel 15 x 7 x 655	Spoke	15	110 - 120 Ft. Lbs.
Aluminum Wheel 16 x 7 x 655	Spoke	16	110 - 120 Ft./Lbs.
Aluminum Wheel 15 x 6 x 545	Modular	15	110 - 120 Ft./Lbs.
Aluminum Wheel 15 x 6 x 655	Modular	15	110 - 120 Ft./Lbs.
Aluminum Wheel 16 x 6 x 655	Modular	16	110 - 120 Ft./Lbs.

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Wheel Lug Nut Torque Sequence Diagram

✓ NOTE

Use a torque wrench to tighten lug nuts. Tightening by hand or with an impact wrench **is not recommended.**

CARBON MONOXIDE SAFETY PRECAUTIONS

Carbon monoxide is a colorless, tasteless, odorless gas. It is a by-product of the burning of fossil fuels (gasoline, LP gas, diesel fuel, etc.). The engines in your tow vehicle and generator (if equipped), furnaces, water heater, LP gas refrigerator and range produce it constantly while they are operating. **CARBON MONOXIDE IS DEADLY.** Please read and understand the following precautions to protect yourself and others from the effects of carbon monoxide poisoning.

Beware of exhaust gas (carbon monoxide) poisoning symptoms:

Dizziness

Intense headache

Weakness and sleepiness

Nausea

Vomiting

Muscular twitching

Throbbing in temples

Inability to think coherently

If you or others experience any of these symptoms, get out into fresh air immediately. If symptoms persist, seek medical attention. Shut down unit and do not operate until it has been inspected and repaired.

After traveling and/or before tow vehicle or generator operation, inspect the exhaust system(s) for damage.

Check the exhaust systems during routine maintenance, and repair any leaks, damage, or obstructions before further operations. Do not modify any exhaust system in any way.

If you do not have a carbon monoxide detector do not run the engine of the tow vehicle when connected to the trailer for any extended period if the trailer is in use when camping.

⚠ WARNING

Do not under any circumstances operate any engine or the cooking stove or range while sleeping. You would not be able to monitor outside conditions to assure that engine exhaust does not enter the interior, and you would not be alert to exhaust odors or the symptoms of carbon monoxide poisoning.

⚠ WARNING

Exhaust gases are deadly. Do not block the tailpipes or exhaust ports, or situate the vehicle in a place where the exhaust gases have any possibility of accumulating either outside, underneath, or inside your vehicle or any nearby vehicles. Outside air movements can carry exhaust gases inside the vehicle through windows or other openings remote from the exhaust outlet. Operate the engines, carbon monoxide-producing systems or components only when safe dispersion of exhaust gases can be assured. Monitor outside conditions to be sure that exhaust continues to be dispersed safely.

PRE-DEPARTURE SAFETY CHECK LIST

Before driving, make sure your vehicle and trailer maintenance is current. This is very important because towing puts additional stress on the tow vehicle.

- Check and correct tire pressure on the tow vehicle and trailer.
- Make sure the wheel lug nuts on the trailer are tightened to the correct torque.
- Be sure the hitch, coupler, draw bar, and other equipment that connect the trailer and the tow vehicle are properly secured and adjusted.
- Check that the wiring is properly connected—not touching the road, but loose enough to make turns without disconnecting or damaging the wires.
- Make sure all running lights, brake lights, turn signals, and hazard lights are working.
- Verify that the brakes on the tow vehicle and trailer are operating correctly.
- Check that all items are securely fastened on and in the trailer.
- Be sure the trailer jack, tongue support, and any attached stabilizers are raised and locked in place.
- Check load distribution to make sure the tow vehicle and trailer are properly balanced front to back and side to side.
- Check side and rear view mirrors to make sure you have good visibility.
- Check routes and restrictions on bridges and tunnels.
- Make sure you have wheel chocks and jack stands.

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LIVING WITH YOUR TRAILER

SETUP

This section outlines the procedures necessary to stabilize and setup your trailer.

Before attempting to setup the trailer, carefully read and understand these instructions. Setting up your trailer is not difficult but does require some forethought and care.

Your trailer is designed to be efficient and comfortable. Careful attention to details and thoroughness during setup will ensure that you will benefit from all the features and comfort built into your trailer.

During storage or after your trailer has been setup, you may notice slight rippling or waviness of the aluminum or fiberglass exterior side-wall panels. This is caused by the normal expansion and contraction of the materials as they warm up and cool down.

LEVELING AND STABILIZATION

Leveling of your trailer at the site is important. A level trailer is not only necessary for comfort but your refrigerator must be level in order to operate properly.

Stabilization is recommended to keep the trailer from jouncing while unhitched when people are moving inside the trailer.

Stabilizer jacks are intended to stabilize the trailer body while the trailer's full weight is supported by the hitch jack (conventional trailers) or landing gear (fifth-wheel trailers) and running gear. Stabilizer jacks are not designed to lift or level the trailer or support its entire weight. If your trailer is not factory-equipped with stabilizer jacks, be sure the jacks you use are load rated for the weight they will support. Optional permanently mounted stabilizer jacks are available on most models and are located near each corner.

Leveling Procedures for a Conventional Trailer

1. If the site is not an asphalt pad, concrete slab or other prepared surface, be sure it is as level as possible. Be sure the ground surface is not soft and will support the weight of the trailer on the stabilizing jacks or other support devices.
2. Before uncoupling, level the trailer from side to side with suitable lengths of 2" x 6" wood blocks under the trailer wheels. Place the 2" x 6" wood blocks on the ground surface forward of the trailer wheels, and tow the trailer onto the 2" x 6" blocks. Block the trailer wheels so the trailer cannot roll.
3. Put the foot pad on the hitch jack post, uncouple the trailer from the tow vehicle and level the trailer front to rear. It may be necessary to place a sturdy 2" x 6" wood block or equivalent under the jack post foot pad to support the jack post on soft ground surfaces.
4. To assure reasonable level at the refrigerator, use the round bubble level inside the refrigerator. Acceptable level is when the bubble is within the marked area of the bubble level.
5. Lower the factory installed stabilizer jacks (if equipped) at the front and rear or position stabilizer jacks under the main frame rails, two or three feet in from the front and back. Adjust each jack to a snug, tight fit. Sturdy wood blocking or equivalent may be required to provide supporting area on the ground.
6. After stabilizing the trailer, be sure the trailer frame is not twisted, buckled, or stressed. Check that all doors and windows operate freely and do not bind.
7. Before resuming travel, be sure all stabilizer jacks are removed or fully retracted.

Living With Your Trailer



CAUTION

After-market stabilizer stands must be placed only under chassis frame rails.



WARNING

Do not use the stabilizer jack(s) as a tire changing jack.



WARNING

Use only the handle provided with the stabilizer jack. Do not use any kind of "cheater" bar on the handle.



WARNING

Do not attempt to use the stabilizer jack(s) to level the trailer, lift the weight of the trailer, raise the tires off the ground, or otherwise place all the weight of the trailer on the stabilizer jacks. Damage to the trailer frame and/or door jamb(s) may occur.

Leveling Procedures for a Fifth-Wheel Trailer

1. If the site is not an asphalt pad, concrete slab or other prepared surface, be sure it is as level as possible. Be sure the ground surface is not soft and will support the weight of the trailer on the stabilizing jacks or other support devices.
2. Before unhitching, level the trailer from side to side with suitable lengths of 2" x 6" wood blocks under the trailer tires. Place the 2" x 6" wood blocks on the ground surface forward of the trailer tires and tow the trailer onto the 2" x 6" blocks. Block the trailer tires so the trailer cannot roll.
3. Lower the "quick drop" landing gear legs before extending the landing gear. The positioning of the "quick drop" legs will depend upon how level your campsite is

from side to side and front to rear. The landing gear is then extended either mechanically (hand crank) or by the optional power motor. It may be necessary to place a sturdy 2" x 6" wood block or equivalent under the foot pads to support the landing gear on soft ground surfaces.

4. To assure reasonable level at the refrigerator, use the round bubble level inside the refrigerator. Acceptable level is when the bubble is within the marked area of the bubble level.
5. Lower the factory installed stabilizer jacks (if equipped) at the rear of the trailer or position stabilizer jacks under the main frame rails, two or three feet in from the rear. Adjust each jack to a snug, tight fit. Sturdy wood blocking may be required to provide supporting area on the ground.
6. The king pin area can be stabilized with a king pin stabilizer jack optional for fifth-wheels.
7. After stabilizing the trailer, be sure the frame is not twisted, buckled, or stressed. Check that all doors and windows operate freely and do not bind.
8. Before resuming travel, be sure all stabilizer jacks are removed or fully retracted.



CAUTION

Do not operate the power landing gear with crank handle engaged.



CAUTION

After-market stabilizer stands must be placed only under chassis frame rails.



WARNING

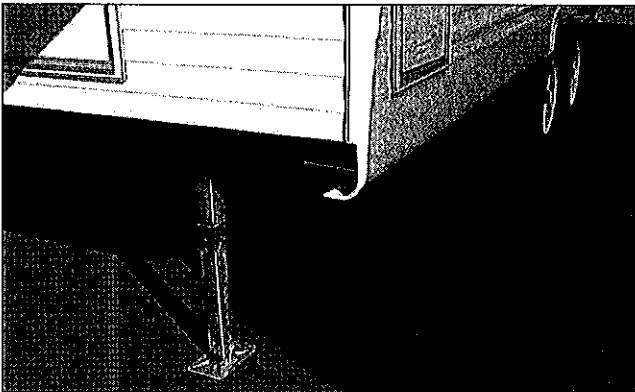
Do not use the stabilizer jack(s) as a tire changing jack.

WARNING

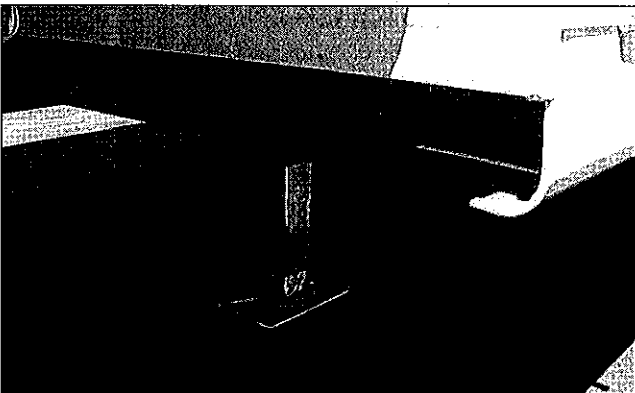
Use only the handle provided with the stabilizer jack. Do not use any kind of "cheater" bar on the handle.

WARNING

Do not attempt to use the stabilizer jack(s) to level the trailer, lift the weight of the trailer, raise the tires off the ground, or otherwise place all the weight of the trailer on the stabilizer jacks. Damage to the trailer frame and/or door jamb(s) may occur.



Fifth Wheel Landing Gear: Lowered Position



Fifth Wheel Landing Gear: Travel Position

Units with Slide-Out Rooms

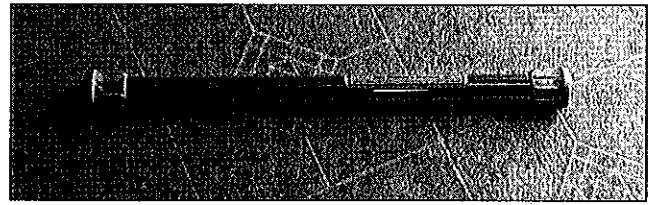
The slide-out room(s) are designed to provide additional living space.

There are several types of slide-outs available as standard or optional equipment on your trailer. Refer to the *Slide-Out* section of the *Equipment* chapter for proper setup and operation.

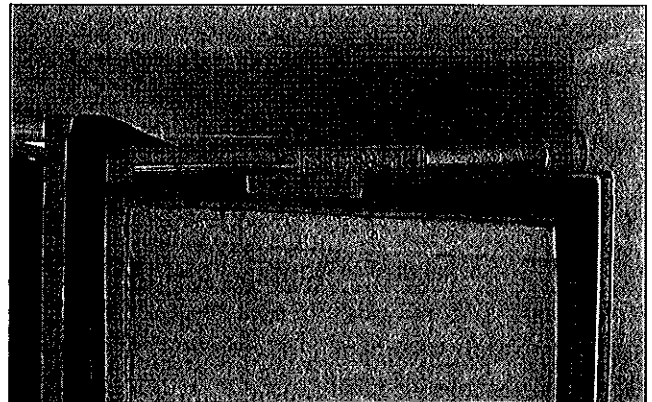
Remove all travel locks before operating the slide-out, and replace them before moving the trailer.

CAUTION

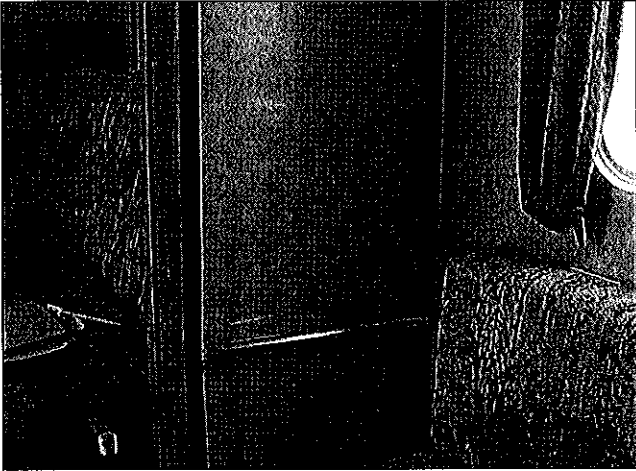
Never attempt to move your trailer with the slide-out room(s) extended. Damage can occur to the slide-out or the trailer.



Slide-Out Travel Lock



Slide-Out Travel Lock Installed



Slide-Out Travel Lock Installed (Alternate Position)

EFFECTS OF PERMANENT OCCUPANCY

Condensation and How to Control It

You need to understand how to properly manage and control the humid conditions and condensation that you may experience.

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

Condensation happens naturally. Just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surfaces of your RV during cold weather when the humidity of the interior air is high.

Water vapor will condense on the inside of the windows and walls. In really cold weather, frost or ice may appear. *It may also condense out of sight within the walls or the ceiling.* If enough water collects in the wall or ceiling materials, it may cause water stains on the wall or ceiling surface. You might think that your walls or ceiling are leaking. You have a problem with con-

densation if you see these signs. You need to do something to reduce the moisture inside your RV.



NOTE

Your trailer is not designed to be used as permanent housing. Use of this product for long term or permanent occupancy may lead to premature deterioration of structure, interior finishes, fabrics, carpeting and drapes. Damage or deterioration due to long term occupancy may not be considered normal, and may under the terms of the warranty constitute misuse, abuse, or neglect, and may therefore reduce your warranty protection.

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

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

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

Q. – Where does all the water come from?

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

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

Bathing – An average shower can put between 1/4 - 1/2 pound of water into the air.

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

Floor mopping – When an 8' x 10' kitchen floor is mopped and rinsed, almost 2 1/2

pounds of water can be released into the air.

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

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

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

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

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

As you can see, just the normal course of living adds a great deal of water to the air.

Q. – What will all this water do to my RV?

A. – The least it will do is fog your windows. If it is really cold outside, frost or even clear ice could form on the inside of the glass.

Excessive moisture in the air could show up as water running down or dripping off walls, ceilings or fixtures. It may look like your roof or windows are leaking. This water may stain woodwork, carpeting, ceiling panels or even furniture.

But the most damage is caused by water you can't even see. Water will penetrate almost any material – except glass and metals. Water vapor in the air always wants to move toward dry air. Scientists

call this “vapor pressure” action. It will go through walls, floor covering, plywood, paint – just about anything. The water that gets trapped in these materials can cause warping, mildew, paint failure and rotting.

The damage caused by excessive humidity can be invisible, and worse, expensive to fix. Please remember that this damage is not covered under the warranty.

Q. – What can I do to reduce or eliminate condensation problems in my RV?

A. – The two most important things are:

Reduce moisture released into the air and increase ventilation

To reduce moisture released inside the RV:

1. Run the vent fan when cooking and the bath vent fan (or open the bath vent) when bathing.
2. Avoid making steam from excessive boiling or use of hot water.
3. Remove water or snow from shoes before entering to avoid soaking the carpet.
4. Avoid drying clothes inside (except in the dryer, if equipped). The water drying out of the clothes goes into the air.
5. Vent appliances to the outside. Your clothes dryer should always be vented according to the dryer manufacturer's installation instructions, if required. (Some dryers are designed to be ventless and do not require a vent to the outdoors.) Check the vents periodically to be sure they are not blocked.
6. If you operate or use vaporizing inhalers, or similar devices, always provide adequate ventilation.

To increase ventilation:

1. Use the kitchen and bath exhaust fans, if equipped, when cooking or bathing. Let them run for a while after a bath or meal.

Living With Your Trailer

2. Ventilate with outside air. Partially open one or more roof vents and/or windows to provide circulation of outside air into the interior. While this ventilation will increase furnace heating load, it will greatly reduce, or eliminate, condensation. Even when it is raining or snowing, outside air will be far drier than interior air and will effectively reduce condensation.
3. Do not tape windows or doors closed. This will prevent any air movement and will make the condensation problem worse.
4. Ventilate closets and cabinets. During use in cold weather, leave cabinet and closet doors partially open to warm and ventilate the interiors of storage compartments built against exterior walls. The air flow will warm the exterior wall surface, and reduce condensation, and prevent possible ice formation. Avoid crowding closets or wardrobe space. Overstuffed closets restrict air flow.
5. Stock kitchen and bath cabinets to allow free air circulation.
6. Open window coverings and windows as often as possible and convenient.
7. Control the interior heat. Here are some tips on controlling humidity with heat:
 - *Keep registers and the furnace blower clean and unobstructed. This helps air circulation.*
 - *Do not operate a humidity device on your furnace.*

WARNING

Do not heat the trailer interior with the range or oven. Open flames add moisture to the interior air. Do not use an air humidifier inside the RV. Water put into the air by the humidifier will increase condensation.

WARNING

Never use open flame gas or kerosene-burning heaters indoors. These devices release water into the air, and the exhaust gases contain poisonous substances.

WARNING

Do not cover emergency exit window(s). This window must be left accessible at all times for emergency exit.

Dripping Ceiling Vents

During cold weather, condensation frequently forms on ceiling vents and may even accumulate to the point of dripping onto the surfaces below. This is frequently misinterpreted as a "leaking" roof vent but is most often condensation drip-page. Follow the preceding steps to control moisture condensation, and protect surfaces with plastic sheeting until the moisture has dissipated.

FIRE SAFETY

The hazard and possibility of fire exists in all areas of life, and the recreational life-style is no exception. Your RV is a complex machine made up of many materials, some of them flammable. But like most hazards, the possibility of fire can be minimized, if not totally eliminated, by recognizing the danger and practicing common sense, safety and maintenance habits.

The fire extinguisher furnished with your RV is rated for Class B (gasoline, diesel fuel, grease, flammable liquids) and Class C (electrical) fires. Read the instructions on the fire extinguisher. Know where it is located and how and when to use it. Remember that portable fire extinguishers are intended for use by the occupants of a building or area that is threatened by fire. They are most valuable when used immediately on small fires. They have a limited amount of fire-extin-

guishing material, and therefore must be used properly so this material is not wasted.

Fire extinguishers are pressurized, mechanical devices. They must be handled with care and treated with respect. They must be maintained as outlined in any maintenance instructions provided with the device so they are ready to operate properly and safely. Parts or internal chemicals may deteriorate in time and need replacement. Always follow maintenance and recharging instructions provided by the fire extinguisher manufacturer. Maintain proper charge in the fire extinguisher.

WARNING

Urethane foam is flammable!

Do not expose urethane foams to open flames or any other direct or indirect high temperature sources of ignition such as burning operations, welding, burning cigarettes, space heaters or unprotected electric light bulbs.

Once ignited, urethane foams will burn rapidly, releasing great heat and consuming oxygen very quickly.

In an enclosed space the resulting deficiency of oxygen will present a danger of suffocation to the occupants. Hazardous gases released by the burning foam can be incapacitating or fatal to human beings if inhaled in sufficient quantities.

Fire Safety Precautions

In addition to instructing occupants on what to do in case of fire, and holding fire drills periodically, consider these fire safety suggestions:

- If you experience a fire while traveling, ***maintain control of the vehicle until you can safely stop. Evacuate the vehicle as quickly and safely as possible.***
- If you experience a fire while camped, ***evacuate the vehicle as quickly and safely as possible.***
- Consider the cause and severity of the fire and risk involved before trying to put it out. If the fire is major or is fuel-fed, stand clear of the vehicle and wait for the fire

department or other emergency assistance.

- If your RV is damaged by fire, do not move or live in it until you have had it thoroughly examined and repaired.

Just as in your home, included below are some common sense tips to help prevent a fire incident from occurring.

- Never leave unattended food cooking on the stove or in the oven.
- Never smoke in bed or leave cigars/cigarettes unattended.
- Keep candles or any open flames away from curtains/fabrics/walls and ceiling.
- Keep matches and igniter devices safely stored and away from small children.
- Do not store combustibles inside your RV (gasoline, charcoal lighter, etc.).

WARNING

Do not store or carry LP gas containers, or other flammable liquids inside your RV.

WARNING

Explosive fuel clouds may be present at fuel filling stations. ***Before refueling (either gasoline, diesel fuel or LPG) be sure to turn off all pilot flames and appliances in your RV. Turning off the propane at the tank is insufficient. Pilotless appliances may still spark or pilot flames may not extinguish immediately.***

DAY/NIGHT SHADES (If Equipped)

The day/night shades are dual-purpose window covering that provide privacy at night and light control during the day.

To operate them, pull down on the lower bar to expose the sheer fabric for daytime light control. For use at night, pull on the upper bar to unfold the privacy curtain.

Living With Your Trailer

MINI-BLINDS (If Equipped)

To raise mini-blinds:

Release bottom of blind from retainer. Pull straight down on cord and release at desired height. It is not necessary to pull the cord to one side or the other to secure blind.

To lower mini-blinds:

Pull straight down on the cord slightly, and move it about 45 degrees to either the left or right and lower the blind. Stop the blind in mid-travel by moving it back to the straight down position. Re-attach the retainers when traveling.

To adjust the angle:

Turn the adjusting rod either direction.

STORAGE

Exterior Compartments

Exterior storage compartments should accommodate most of your storage needs. All of the storage compartments, except the LP gas tank compartment, can be locked. Fire prevention regulations require that the LP gas tank compartment be unlocked at all times.

Please note: Your RV could be overloaded or out of balance if not properly loaded. Refer to the *Travel Trailer Loading* section of the *On The Road* chapter of this manual, and follow the loading and weighing instructions in that section. When storing equipment and supplies:

- Always keep tools and equipment stored in areas where they will not shift while traveling.
- Whenever possible, place heavy articles in storage compartments which are low and in the best location for weight distribution. Pack articles carefully in the storage compartments to minimize shifting. If necessary, use straps to prevent movement.

- Be sure liquid containers are capped and cannot tip or spill.
- Secure all glass containers and dishes before traveling.
- Exterior storage compartments may not be watertight in all conditions. Carry any articles which could be damaged by water inside the RV.



Do not store flammable, volatile liquids or hazardous chemicals inside the RV or in outside storage compartments. Toxic fumes from these liquids or chemicals may enter the interior of the RV.

Interior Storage

The closets and cabinets have catches along one edge of the door. Pull on the cabinet door handle to open. Overhead doors have supports to hold them open. Drawers rest in notches when they are closed. To open drawers, lift up slightly, then pull open.

Closets may be equipped with 12-volt lights that turn ON when the closet door is opened. Be sure the light goes OFF when the closet door is closed—your battery will be discharged if it stays ON. If the light stays on when the door is closed, the door switch requires adjustment.

The same loading considerations apply to interior storage areas as to exterior.

PLUMBING SYSTEMS AND HOLDING TANKS

The plumbing systems in your trailer are constructed of durable thermoplastic materials. Holding tanks and piping components are strong, lightweight, and corrosion resistant.

Holding tanks are of three types:

- **Fresh** – Fresh potable water
- **Grey** – Lavy/shower effluent
- **Black** – Toilet effluent

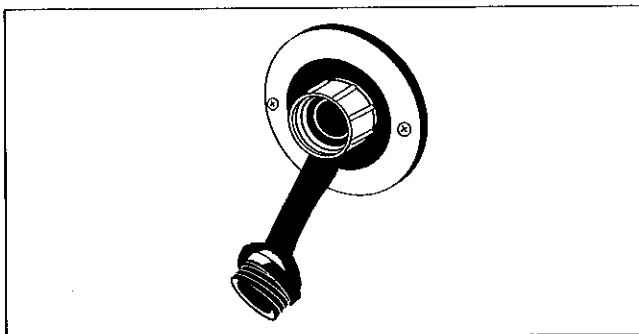
It is recommended to discharge as many fluid tanks as practical before driving.

External Fresh Water Hookup

The external system is pressurized by the water system at an RV park or city water supply. The connection is located on the road side of the trailer.

To connect to pressurized city water:

1. Connect one end of a potable water hose to the RV park or city water supply. This will usually be a faucet or valve similar to your garden hose valve at home. Potable water hoses are available at RV supply stores.
2. Run the city water supply for a few seconds to clear the line. Turn off the water.
3. Attach the other end of the potable water hose to city water connection located on the trailer. Make sure all connections are tight.
4. Turn on the RV park/city water supply. Open all faucets inside the trailer to clear the lines. Then turn off faucets.



External Fresh Water Connection

CAUTION

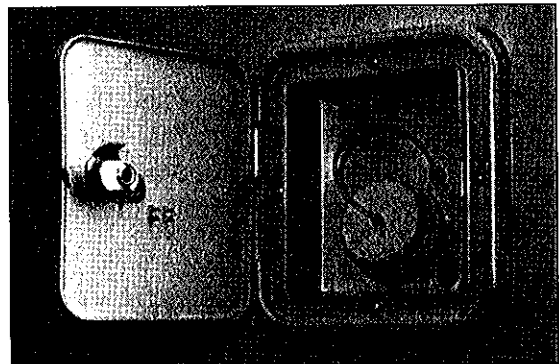
Since water pressures at campgrounds vary, we recommend you install an in-line pressure regulator (if not equipped) at the water supply faucet. This will protect the trailer water system and your supply hose from excessively high water pressure.

To disconnect the city water:

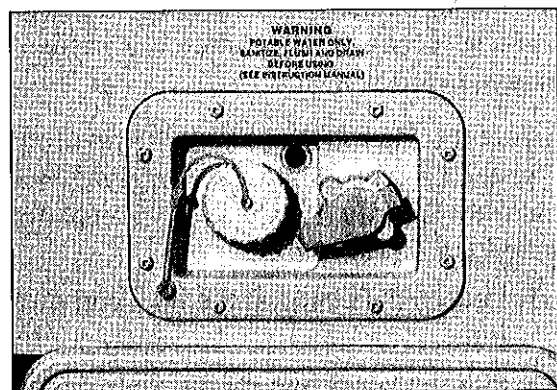
1. Turn OFF the city water supply.
2. Remove the hose from the city water supply valve.
3. Drain and store the hose.

Filling the On-Board Water Tank

1. Gravity fill –The external gravity water fill is located on the exterior of the trailer. The on-board water tank can be filled here. To fill the fresh water tank, remove the cap, remove the vent plug, and fill the tank using a potable water hose.



Fresh Water Tank Fill



*Combination Fresh Water Tank Fill/
External Fresh Water Connection*

Plumbing Systems and Holding Tanks

Draining the Fresh Water Tank

Avoid leaving the water in the tank when the trailer is not in use. Turn the water pump OFF before draining the water tank. Whenever possible, drain the fresh water tank before traveling. Water in the tank will reduce the carrying capacity of the trailer. See *Trailer Loading* section of the *On The Road* chapter.

The main water tank drain plug is located under the trailer at the water tank location.

Water Pump

The on-board fresh water system is pressurized by a self-priming, 12-volt DC pump. The pump operates automatically when the pump power switch is ON and a faucet is opened. When the faucets are closed, the pump shuts off. A fuse at the converter panel protects the pump circuit. It can run dry for extended periods without damage. See *Electrical Systems* chapter.

Turn the pump master switch ON to pressurize the system. When a faucet is opened after the initial filling of the tank, the water may sputter for a few seconds. This is normal and is not cause for concern. The water flow will become steady when all air is bled from the water lines.

Water Pump Filter

Dirt, mineral scale, and organic matter are filtered out of the fresh water system by an in-line water filter on the inlet side of the water pump. If you suspect a clogged filter, it is easily removed and cleaned.

Inspect the filter after running the first full tank of water. Clean and inspect monthly thereafter. The filter is located in the utility compartment behind the service panel.

1. Loosen the clamp at the inlet end of the filter.
2. Pull the water line off the filter.

3. Unscrew the filter from the water pump.
4. Turn each end of the filter and pull apart.
5. Flush out and clean screen.
6. Reverse procedure to install.
7. Operate the water pump and check for leaks.

Low Point Drains

To drain hot and cold lines:

1. Open hot and cold low point drains.
2. Open the shower handle and faucet until all water has drained from the lines.

Troubleshooting the Fresh Water System

Water system problems usually fall into two categories: Inherent system problems, and problems caused by neglect. System problems are usually the result of road vibration and campsite water pressure variations. Problems of neglect usually stem from failure to clean filters, improper winterization, and poor battery maintenance. Most water system problems can be avoided by conscientious maintenance.

Leaks

Vibration, flexing and twisting while traveling can work pipe fittings loose. Check all plumbing for leaks at least once a year. If the water pump runs when a faucet is not open, suspect a leak. Be sure the tank drain valves are tightly closed. Leaks occur most often around threaded fittings. If necessary, tighten or clean and tighten the fittings. Do not overtighten fittings. Connections at galley and lavatory fixtures should not be tightened with a wrench. They will normally seal with hand-tightening. If a leak persists at one of the fittings, disconnect it completely and check for mineral deposits or other foreign matter at the seating surfaces. Clean the surfaces thoroughly and reinstall the fitting.

Plumbing Systems and Holding Tanks

Connections at the water tank, pump and valves are made with special clamps. They can be replaced with standard automotive type hose clamps.

Leaks caused by freezing damage can be prevented by proper winterization of the system. See the *Storage* chapter of this manual. Freezing damage is usually extensive and may include a burst water tank, split piping, and a damaged water pump, toilet, and water heater. If you experience this type of damage, repairs can best be made by an authorized Fleetwood dealer.

For your safety, the shower faucet is equipped with a vacuum breaker device. This device is designed to prevent backflow of water into the fresh water system, reducing the possibility of contamination of the water supply. When the faucet is in the OFF position with the shower hose held above the faucet, water will drain out of the vacuum breaker. This drainage is not a defect, but indicates that the faucet is working correctly.

Sanitizing the Fresh Water System

As approved by the U.S. Public Health Service, sanitize the fresh water tank and piping system whenever the system may have become contaminated, has not been used for a period of time, or before long periods of storage. This will discourage the growth of bacteria and other organisms that can contaminate the water supply. Use a chlorine/fresh water rinse as follows:

1. Prepare a solution of 1/4-cup household liquid chlorine bleach (5% sodium hypochlorite) to one gallon of water. Use one gallon solution for each 15 gallons of tank capacity.
2. Close drain valves and faucets, pour the chlorine solution into the exterior fresh water tank filler spout, and complete filling at tank with potable water.
3. Turn water pump switch ON. (Be sure you have 12-volt DC power.) Open all faucets

individually until water flows steadily, then turn them off. This will purge any air from the lines.

4. Top off water tank with fresh water and allow the system to stand for at least 4 hours.
5. Drain the entire system by opening all potable water tank valves, plumbing line drain valves, and operating faucets.
6. Flush the system with potable water. Let the fresh water flow through the system for several minutes to flush out the chlorine solution.
7. After you stop the flushing, close the tank valve, drain valves, and faucets. You can now fill the tank with potable water, and the system is ready to use.

Drinking Water Filter System (If Equipped)

The water filter helps provide consistent drinking water quality. The filter cartridge is located in the cabinet under the galley sink. Your *Owner's Information Package* contains detailed operating and maintenance instructions concerning this system.

Please note that the separate faucet at the galley, and the optional icemaker are the outlets for the filtered water. Although this filtered water is not available at the standard galley and lavy outlets, the water available at those outlets is filtered by the water pump filter. Note also that this system is not designed for or effective in removing or neutralizing bacterial contaminants.



NOTE

Turn water pump off before traveling. Road vibration could cause a faucet to open. If the water pump is on, your fresh water supply could be pumped into the inside of the tub or sink.

Plumbing Systems and Holding Tanks

WASTE WATER SYSTEM

The waste water system in your RV is made up of sinks, tub, shower, toilet, plumbing drain and vent lines, a "gray water" holding tank and a "black water" holding tank. The gray tank holds shower, tub and sinks, where the black tank holds toilet effluent. The holding tanks make the system completely self-contained and allow you to dispose of waste water at your convenience. A flexible sewer hose is required to connect the holding tank outlet to the inlet of an approved waste water dump station or sewer system.

The drain plumbing is very similar to that used in your home. The system is trapped and vented to prevent waste gases from backing up into the RV. The drain plumbing is made of plastic, and is durable and resistant to most chemicals. All drain plumbing except the toilet connection terminates in the gray water holding tank and drains directly into it.

Toilet

Your RV is equipped with a marine-type toilet. The flushing mechanism, whether a foot-operated pedal or a hand-operated lever, allows a valve in the bottom of the bowl to open, permitting the contents to be flushed into the "black" holding tank. A stream of water under pressure from the RV's water system swirls around the bowl, cleaning it and flushing the contents into the holding tank. Most models have two levers, each working independently of the other so the bowl can be filled with water prior to use.

In order to help prevent hard deposits from building up within the "black" tank and help reduce unwanted odor, it is recommended to always keep water in the tank. When empty after a tank discharge, flush the toilet several times in order to introduce about five gallons of water.

It is highly recommended that a deodorizing product should be used for the black tank after each discharge at a dumping station. This will help control unwanted odors.

Ensure that the black tank sewer drain system is always closed and only opened when draining at a dump station. Never allow your black tank system to dry out unless it has been thoroughly cleaned, sanitized and rinsed first.

For additional information, please refer to the operating manual in your *Owner's Information Package*.

Draining the Holding Tanks

The holding tanks terminate in a valve arrangement that permits draining each tank separately.

The valves are called knife valves. A blade closes the opening in the sewer drain pipes. The blade is connected to a T-handle and cable assembly mounted in the utility compartment. Pull the T-handle to release the contents of the tank(s).

During self-containment use, the sewer line is securely capped to prevent leakage of waste material onto the ground or pavement. ***Do not pull the holding tank knife valve open when the protective cap is installed on the pipe.*** Always drain the tank into an acceptable sewer inlet or dump station.

Drain the holding tanks only when they are at least $\frac{3}{4}$ -full. If necessary, fill the tanks with water to $\frac{3}{4}$ -full. This provides sufficient water to allow complete flushing of waste material into the sewer line.

Whenever possible, drain the holding tanks before traveling. Waste water and sewage in the holding tanks reduce the carrying capacity of the trailer. See the *Trailer Loading* chapter.

During extended or semi-permanent hookups to sewage systems, waste materials will build up in the tank and cause serious plugging if the tank valves are continuously open. In these cases, keep the valves closed until the tanks are $\frac{3}{4}$ -full, and then drain into the sewage system.

The holding tank drain valve outlet is to be used with a removable termination fitting that locks onto the outlet with a clockwise twist. Clamp

Plumbing Systems and Holding Tanks

the sewer drain hose to this fitting. A protective cap should remain in place when you are not draining the tanks.

WARNING

Holding tanks are enclosed sewer systems and as such must be drained into an approved dump station. Both black and gray water holding tanks must be drained and thoroughly rinsed regularly to prevent accumulation of harmful or toxic materials.



NOTE

Local or state regulations may prohibit highway travel unless the holding tank outlet is securely capped.

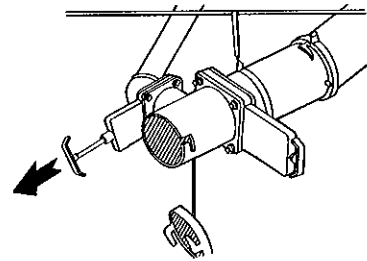
To drain the holding tanks:

1. Attach the sewer hose to the holding tank outlet. Insert the end of the hose into the sewer or dump station inlet, pushing it firmly far enough into the opening to be secure. In some cases, adapters may be necessary or required between the line and the inlet. Arrange the sewer hose so it slopes evenly.
2. Drain the black water holding tank first. Grasp the handle of the black water knife valve (the large one) firmly and slide the valve open with a quick, steady pull.
3. Allow enough time for the tank to drain completely. Rinse and flush the tank through the toilet. When the tank is empty, push the handle in to close the valve. Run enough water (up to five gallons or so) into the tank to cover the bottom. This will aid the break up of solid wastes, and reduce "pyramiding" of waste material.
4. To drain the gray water tank, repeat the steps above using the small knife valve. This tank is drained last to aid in flushing the outlets and hose. The gray water knife valve may be left open in a semi-permanent hookup.

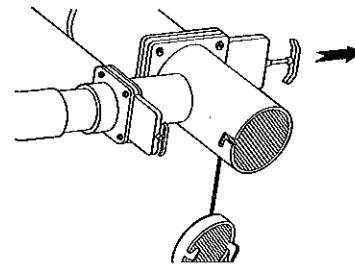
5. See the tank flush system instructions in the next section if your recreational vehicle is so equipped.
6. Remove the sewer hose and cap the outlet.
7. Rinse out the sewer hose with fresh water and remove the sewer hose from the dump station.
8. Replace sewer or dump station covers.

CAUTION

The sewer drain valve must be open when using the black tank flush inlet.



Gray Holding Tank Dumping



Black Water Tank Dumping

Black Tank Flush System (If Equipped)

The black water holding tank is equipped with rinsing spray heads that will aid in the removal of sewage residue from the interior of the holding tank. To operate the tank flushing system, follow the procedures for *Draining The Holding Tanks* in this chapter. After dumping the gray water tank proceed as follows:

Plumbing Systems and Holding Tanks

1. With the dump valves open, attach a garden hose to the black tank flush inlet connection.
2. Turn on water supply to garden hose and allow the water to run for approximately three minutes to flush tank.
3. Turn off water supply to garden hose.
4. Remove hose from black tank flush inlet connection and store hose.
5. Rinse out the sewer hose with fresh water and remove the sewer hose from the dump station.
6. Replace sewer or dump station covers.
7. After rinse water has thoroughly drained from the black tank, close the knife valve and replace the termination cap. If you are parked at a site with a semipermanent sewer hookup, keep the black water knife valve closed to allow the waste level to build up. The outlet will probably clog if you leave the knife valve open continually. Run enough water into the tank to cover the bottom. This will aid the break up of solid wastes.

Please...Practice good housekeeping when draining wastes at a campsite or disposal station. Leave the site in good order. Above all, do not pollute.



CAUTION

Do not use the same hose you use for filling the potable water tank, or for connection to the city water inlet. This is especially true if you connect the quick connect hose to the typical rinsing hoses at most dumping stations. Use of a different hose will insure that you will not contaminate your fresh water supply.

CAUTION

The sewer drain valve must be open when using the black tank flush inlet.

Holding Tank Care

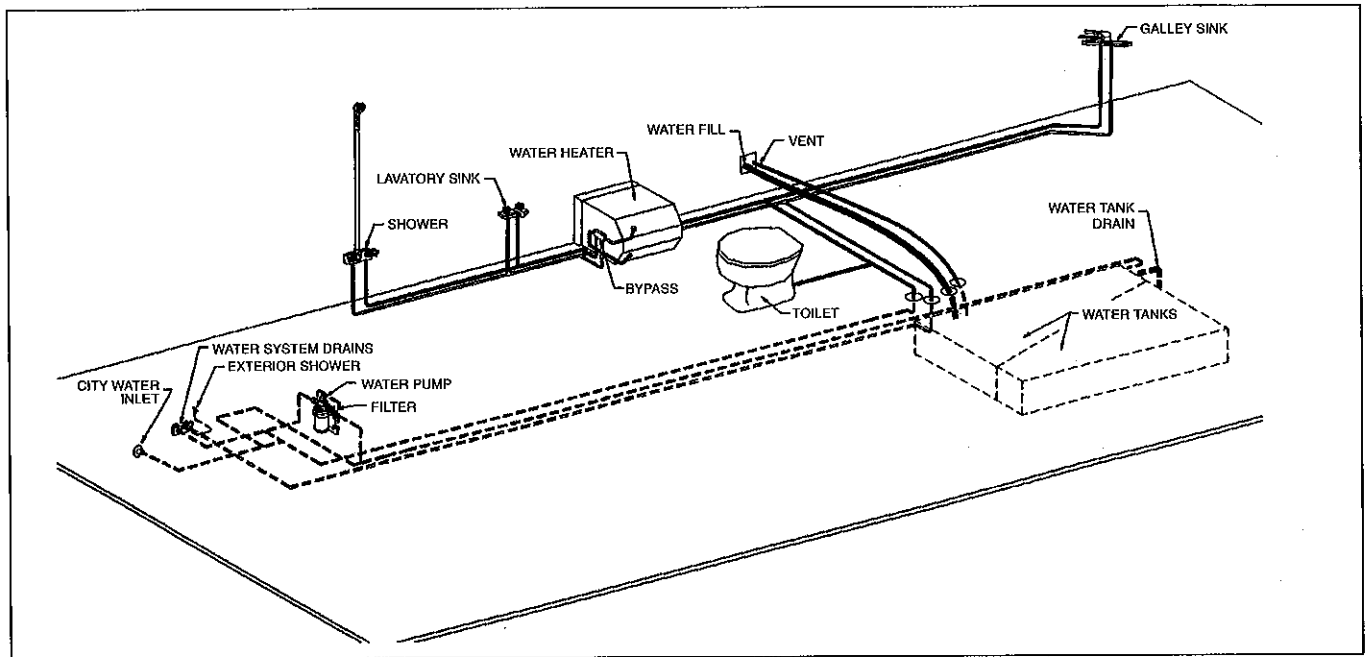
Since holding tanks don't rely on any sophisticated mechanical devices for their operation, they are virtually trouble-free. The most common problem is also an unpleasant one – clogging. You can minimize the chances of clogging by keeping the following considerations in mind:

- Keep the black water tank knife valve closed. Fill tank to at least $\frac{3}{4}$ -full before draining. Be sure to cover the tank bottom with water after draining.
- Use only toilet tissue formulated for use in septic tank or RV sanitation systems.
- Keep both knife valves closed and locked, and the drain cap tightly in place when using the system on the road.
- Use only cleaners that are approved for use in septic tank or RV sanitation systems.
- Use a special holding tank deodorant chemical approved for septic tank systems in the black water holding tank. These chemicals aid the breakdown of solid wastes and make the system much more pleasant to use. Do not put facial tissue, paper, ethylene glycol-based or other automotive antifreeze, sanitary napkins or household toilet cleaners in the holding tanks.
- Do not put anything solid in either tank that could scratch or puncture the tank.

If the drain system does get clogged:

- Use a hand-operated probe to loosen stubborn accumulations.
- Seriously clogged P-traps may require disassembly. Be careful not to overtighten when reassembling.
- Do not use harsh household drain cleaners.
- Do not use motorized drain augers.
- Sometimes the holding tank valve will get clogged. In this case, a hand-operated auger may be necessary. Be ready to close the valve quickly once the clog is cleared. If the seal gets damaged, it is easily replaced.

Plumbing Systems and Holding Tanks



Typical Hot and Cold Diagram

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ELECTRICAL SYSTEMS

The electrical systems in your trailer are designed and installed in accordance with all codes, regulations, and standards in effect at the time the trailer was built.

There are three basic systems in your trailer. The 120-volt AC system is similar to that in a house; it is supplied by an external service connection, or by a generator set installed in a compartment (optional on certain models). The exterior lighting and braking systems use 12-volt DC power supplied by the tow vehicle. The interior lighting, fans, and some appliances use 12-volt DC power supplied either by the trailer battery, the tow vehicle, or by the AC/DC power converter. (Some trailers are not equipped with an interior 12-volt DC system.)

120-VOLT AC ELECTRICAL SYSTEM

This system provides grounded (three wire) electrical service for appliances such as air conditioners, microwave ovens, etc. The 120-volt system also provides power for the AC/DC power converter. Your trailer is equipped with a heavy duty power cord to connect to an external 120-volt, 30-amp rated AC service. The cord and plug are molded together to form a weatherproof assembly. Do not cut or alter the cord in any way. Do not remove the ground pin from the attachment plug, or defeat the ground circuit in the trailer. If you have to use an adapter to plug into an electrical service, make sure the ground is maintained. Never use a two-conductor extension cord, or any cord that does not assure appropriate and adequate ground continuity. Never plug the 120-volt cord into an ungrounded receptacle.

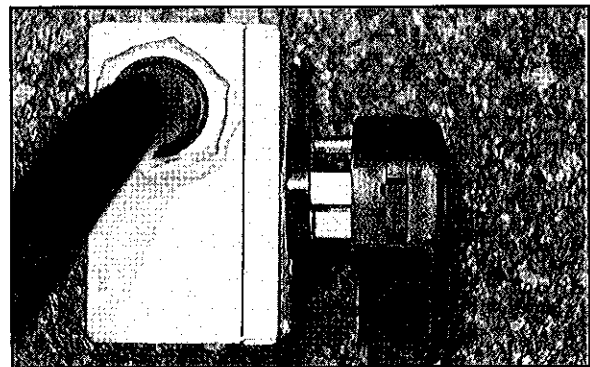
WARNING

Do not operate the 120-volt AC electrical system without a proper ground. Electrocutation or severe electrical shock could result.

Power Cord Hook-Up

Your trailer is equipped with one heavy duty, 30-amp power cord (some trailers are equipped with 50-amp service). It is commonly called the "shore cord." This cord is used to connect to external 120-volt AC service. The cord will supply power to all 120-volt appliances and outlets. The cord and connector is molded together to form a weatherproof cable assembly. Do not cut or alter the cable in any way. Do not remove the ground pin in the cable connector, or defeat the ground circuit in the trailer.

To connect the power cord to external service, push the plug straight into the receptacle until it seats completely. See the illustration.



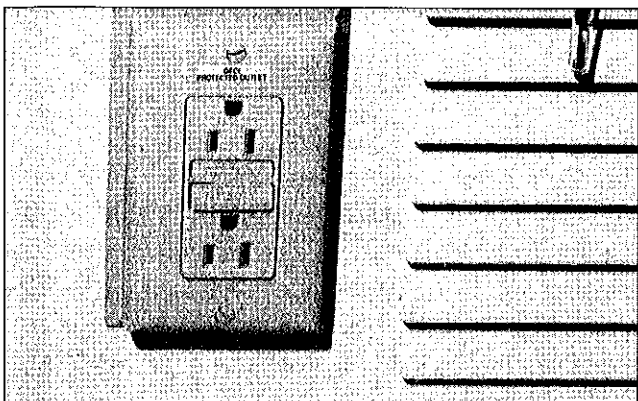
Push power cord in until it seats completely.

Ground Fault Circuit Interrupter (GFCI)

Galley, bathroom and patio 120-volt electrical outlets are protected by a **Ground Fault Circuit Interrupter (GFCI)**. This device is provided in compliance with ANSI A119.2 and NFPA 501C requirements, and is intended to protect you against the hazards of line to ground electric faults and electrical leakage shocks possible when using electrical appliances in damp areas.

Should a circuit or appliance develop a potential shock hazard, the GFCI device is designed to disconnect the outlet (and other outlets on the same circuit), limiting your exposure time to the shock hazard caused by current leakage to ground.

Electrical Systems



GFCI Receptacle

The GFCI device does not prevent electric shock, nor does it protect a person who comes into contact with both “hot” and neutral sides of the circuit. It does not protect against electrical circuit overloads.

Test the GFCI at least once a month while operating on 120-volts AC. To test the GFCI:

1. Push the TEST button. The RESET button should pop out, indicating that the protected circuit has been disconnected.
2. If the reset button does not pop out when the test button is pushed, a loss of ground fault protection is indicated. Do not use the outlet or other outlets on the same circuit. Have the trailer electrical system checked at an authorized Fleetwood dealer or by a qualified electrician. Do not use the system until the problem has been corrected.
3. To restore power, push the RESET button.

Your ***Owner's Information Package*** contains a card that can be used to record test dates. Keep the card in a conspicuous place, and keep it up to date.

✓ **NOTE**

If the galley or patio outlets don't work, check the bathroom GFCI. Reset it if necessary. If the GFCI continues to trip, have the trailer electrical system checked at an authorized Fleetwood dealer or by a qualified electrician.

⚠ **WARNING**

Do not install 12-volt fuses or 120-volt breakers with amperage ratings greater than that specified on the device or label. Doing so constitutes a fire hazard.

THE POWER DISTRIBUTION CENTER

One side of the power center consists of a breaker box containing the 30-amp main breaker and the 15- and/or 20-amp branch circuit breakers. (Some trailers are equipped with 50-amp service.) These devices interrupt the power if the rated current is exceeded. Never substitute a breaker with a higher value than originally installed. If a breaker trips repeatedly, reduce load on that circuit and have the system checked by a qualified electrician.

THE POWER CONVERTER

The power converter will supply 12-volt DC power when your trailer is operating on 120-volts AC. (Trailers not equipped with the interior 12-volt system do not need a power converter.) When you are connected to 120-volt AC power, the power converter works with the trailer battery to provide power for the interior 12-volt system and to keep the battery charged. While a battery is not necessary for converter operation, when 12-volt power demand is high some converters will produce more stable voltage levels if a battery is installed. At these high power draws, the battery supplies some of the power demanded; obviously, it will not charge as quickly or completely under this condition.

✓ **NOTE**

The 12-volt battery is not supplied with the trailer by the manufacturer. Check any installed battery manufacturer specifications and requirements for use.

The converter will supply a small current to the battery even when it is fully charged. To prevent excess electrolyte loss, check the levels every 30

days when the converter is connected to 120-volt AC power. Always refill with distilled water. See *Battery Inspection and Care* in this section.

Solar Panel (If Equipped)

Your new trailer may be equipped with an optional solar charger. The solar charging panel installed on the roof of your trailer is designed to “trickle-charge” your battery system. It is not intended to be a fast charger. It also cannot supply large amounts of current to operate 12-volt DC electrical equipment. When the sky is clear and under bright sun, the solar panel will help keep your batteries “topped-up”. Do not try to operate 12-volt DC appliances with the output of the solar panel. A light on the air conditioner indicates when the solar panel is operating.

12-VOLT DC SYSTEM - EXTERIOR

This is the vehicle electrical system. It includes the electric trailer brake system, taillights, turn signals, clearance lights, and backup lights (if equipped). It is powered by the tow vehicle through the car connector cord.

Exterior Bulbs and Fuses

Replace bulbs and fuses with the same type or equivalent. Fuses for these exterior lights are located on the tow vehicle, usually in the tow vehicle fuse panel. The brake system should never be fused.

12-VOLT DC SYSTEM - INTERIOR

All 12-volt DC lights (other than those listed above), fans, pumps, and motors are included in this system. The fresh water pump, furnace, and any 12-volt entertainment equipment are also included. Power may be supplied by the AC/DC power converter, or by the trailer battery if installed.

The power center contains most of the fuses for the 12-volt system. Some fuses for items such as

power jacks may be located at the trailer battery. These fuses are automotive type and should be replaced with the same type and amperage rating. Blade-type fuses located in battery compartments must be a sealed type (ATC). Some fuse types have exposed fuse links and should not be used near flammable materials.

WARNING

Do not install fuses with amperage ratings greater than that specified on the fusebox or fuse holder label.

Circuits which are powered by the battery (except trailer brakes) are protected by one or more 12-volt circuit breakers. If one of these breakers trips, reset by disconnecting the battery. Find the cause of the breaker tripping before reconnecting the battery.

Battery charge can be checked on the Monitor Panel or Battery Disconnect panel, if equipped. To check the battery charge:

- **Unplug** the 120-volt AC power cord to turn the power converter off.
- **Turn on** a light to load the battery slightly.
- **Press** appropriate switch to activate monitor panel.
- **Read** battery condition on the display.

Selecting a Battery

When the trailer battery requires replacement, always choose a battery with the same physical and electrical characteristics as the original equipment. We recommend an RV/marine deep cycle battery. Your dealer or any other authorized Fleetwood dealer can advise you on proper battery selection.

NOTE

The 12-volt battery is not supplied with the trailer by the manufacturer. Check any installed battery manufacturer specifications and requirements for use.

Electrical Systems

Check the external condition of the battery monthly. Look for cracks in the cover and case. Check the vent plugs. Replace them if they are cracked or broken. Keep the battery and terminals clean. Accumulations of acid film and dirt may permit current to flow between the terminals and discharge the battery. To clean the battery, wash it with a diluted solution of baking soda and water to neutralize any acid present, then flush with clean water. Foaming around terminals or on top of the battery is normal acid neutralization. Avoid getting the soda solution in the battery. Be sure the vent caps are tight. Dry the cables and terminals before reinstalling them, and don't use grease on the bare metal inside the cable terminals to prevent corrosion. Grease is an insulator. Electricity will not flow through it. A plastic ignition spray will protect the terminals after you have cleaned and reinstalled them.

To prevent the battery from shaking in its carrier, be sure the hold-down strap is securely installed. Check it often. Keep the battery storage box clean and free of corrosion and chemical accumulation.

WARNING

Disconnect the 120-volt electrical cord and both cables from the trailer battery before working on either electrical system.

WARNING

Remove rings, metal watchbands, and other metal jewelry before working around a battery. Use caution when using metal tools. If the tool contacts the battery terminals or metal connected to them, a short circuit could occur which could cause personal injury or fire.

WARNING

Do not allow battery electrolyte to contact skin, eyes, fabrics, or painted surfaces. The electrolyte is a sulfuric acid solution which could cause serious personal injury or property damage. Wear eye protection when working with batteries.

Battery Charging

Normally the battery will be kept charged by either the tow vehicle charging system while on the road, by the power converter when plugged into AC service or by the optional solar battery charger. On those occasions when the battery needs to be charged from a different charging source, please follow these safety guidelines:

- *Do not smoke near batteries being charged or which have been recently charged. Please note that batteries are being charged while you drive, while you are connected to 120-volt AC power by the converter or by the solar battery charger (if equipped).*
- *Do not break live circuits at the terminals of the battery. Use care when connecting or disconnecting booster leads or cables on fast chargers. Poor connections are a common cause of electrical arcs which can cause explosions. Ensure polarity is correct. Never reverse polarity or damage will result.*
- *Check and adjust the electrolyte level before charging. Fill each cell to the indicator with distilled water.*
- *Do not charge the battery at a rate that causes the electrolyte to spew out the top of the battery. Electrolyte is corrosive, always clean up any spills.*
- *Always remove the vent caps before charging the battery.*

WARNING

Never expose the battery to open flame or electric spark. Chemical action in the battery generates hydrogen gas which is flammable and explosive.

Storage Precautions

When you store your trailer for a week or more, be sure to disconnect the battery. Electronic tuning radios, clocks, and the LPG leak detector all draw a small amount of current whenever the battery is connected. Also, even a disconnected battery will naturally "self discharge" about 1% of capacity per day. If you intend to store your trailer for any length of time, remove the battery, store it in a cool, dry place, and recharge every month.



NOTE

If your trailer is equipped with a solar battery charger and will be exposed to direct sunlight, battery removal for storage is not necessary. Check the battery electrolyte at least every 30 days during storage.

TYPICAL BULBS AND FUSES

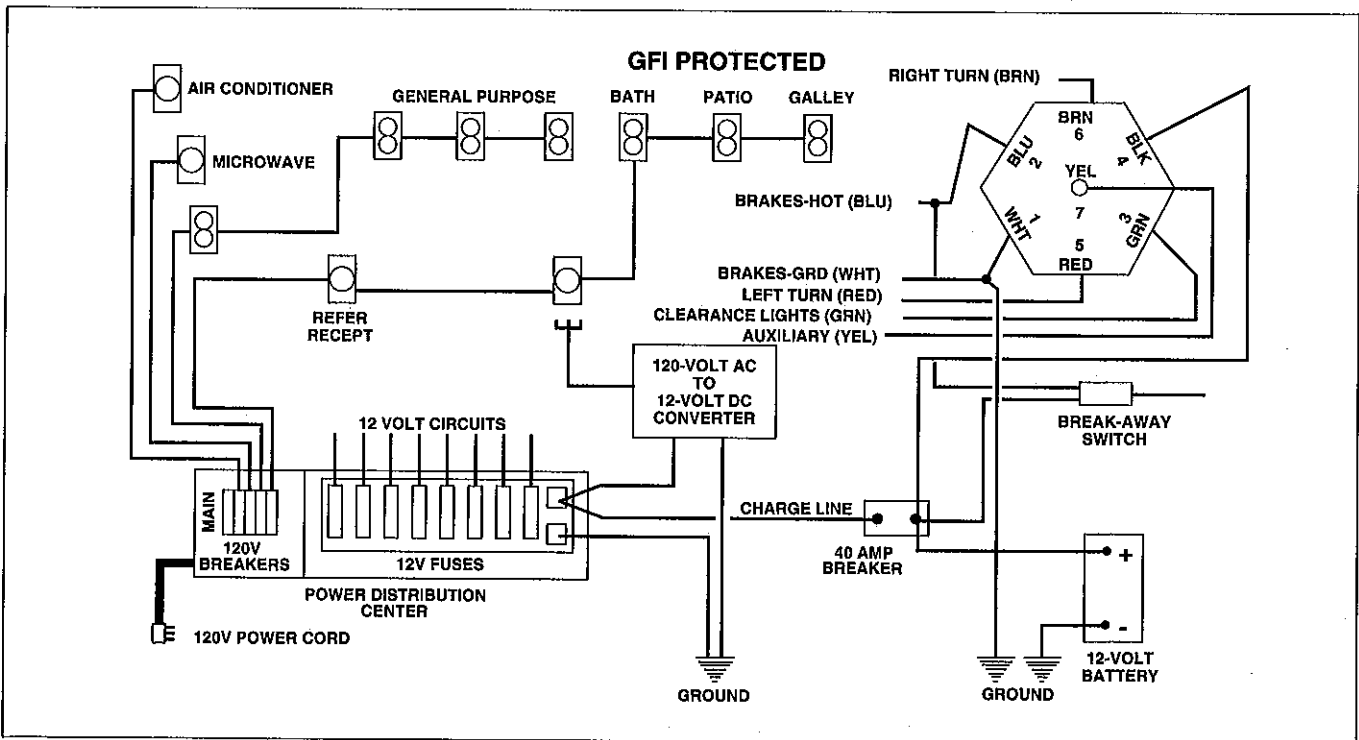
The following is a list of typical 12-volt bulbs and fuses used in your trailer. It is recommended to keep a screwdriver, fuse puller, and a couple of spares of each type on hand.

Bulbs

Interior lights:	#1141
Stop/tail lights:	#1157
Porch light:	#1003 or 93
License plate light:	#67
Clearance lights:	#194
Backup lights (if equipped):	#1156

Fuses

Blade type (Buss® ATC):	7.5, 10, 15, 20, & 30-amp
Glass type: (AGC):	7.5, 20, & 30-amp



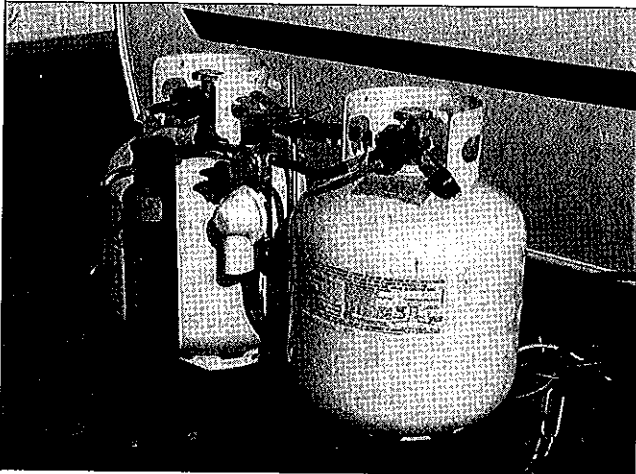
Electrical System Wiring Diagram (typical 30-amp system). Some trailers are equipped with 50-amp service.

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LP GAS SYSTEM

Liquefied petroleum (LP) gas is available from an approved storage container to operate your range, oven, furnace and water heater, and as an alternate energy source for some refrigerators. With proper handling precautions, LP gas is safe and provides modern convenience wherever you travel. LP gas is stored as a liquid under pressure and vaporizes under the control of pressure regulators.

A typical LP gas tank installation is illustrated below. Although specific details of the system may differ in your trailer, the major components and their relationships will be similar to those shown.



LP GAS SAFETY PRECAUTIONS

With proper usage LP gas is considered a safe and reliable fuel. As with any other volatile and flammable material, common sense dictates that LP gas be handled and used with respect and caution. Because LP gas systems are so reliable, they are often taken for granted. Neglect can be a very dangerous habit. If the system is maintained regularly, you can expect almost trouble free operation.

The first time you have your LP gas cylinder filled, have the serviceman bleed a little LP gas out of the small outage valve (this also lets you check that the bottle is not overfilled) and note the

odor described as garlic/rotten egg like for future reference. A small number of people cannot smell this odor; if you are one of these you must take extra care whenever you use your trailer.

Keep the cylinder valve closed and turn off all appliances if the unit is not being used.

WARNING

LP gas is flammable and potentially explosive. Use proper handling, lighting and ventilating procedures.

1. The distinctive odor of LP gas indicates a leak. If you smell gas:

Extinguish any open flames, pilot lights and all smoking materials.

Do not touch electrical switches.

Shut off the gas supply at the container valve(s) or gas supply connection(s).

Open doors and other ventilation openings.

Leave the area until odor clears.

Have the gas system serviced by a professional before using the trailer again.

2. Never check for leaks with an open flame. Use an approved leak detection solution or a non-ammoniated, non-chlorinated soap solution only.

3. Always be careful when drilling holes or fastening objects to the trailer. The LP gas supply lines could be punctured by a nail or screw.

4. Do not restrict access to LP containers. In an emergency, the container service valve must be easily identified and accessible. The container compartment door must always be unlocked, and the LP label should be visible.

5. Do not carry or store filled or empty LP gas containers, including accessories such as gas barbecues, in your trailer. LP gas containers are equipped with a safety device that relieves excessive pressure by discharging gas to the atmosphere. Always store LP gas containers outside with the valves closed and plugged/capped.

6. Do not use any LP gas container other than the one furnished with your trailer without being sure that all connecting components are compatible.

7. Turn off LP gas main valve before filling LP gas container or entering an LP gas bulk plant or motor fuel service station. Turn off all pilot lights and

LP Gas System

WARNING

appliances individually before refueling of motor fuel tanks and/or LP gas containers. When not individually turned off, automatic ignition appliances may continue to spark when LP gas is turned off at the container.

8. Do not fill LP gas containers to more than 80% capacity. Overfilling can result in uncontrolled gas flow which can cause fire and explosion. A properly filled container holds about 80% of its volume as liquid.

9. LP gas regulators must always be installed with the diaphragm vent facing downward. Make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage which could result in excessive LP gas pressure causing fire or explosion.

10. Do not use a wrench or pliers to close the tank shut-off valve. This valve is designed to be closed by hand. If a tool is required, the valve needs repair or replacement.

11. Be sure the cylinders are securely fastened in their rack whenever they are mounted on the trailer.

12. If you do not have the special tools and training necessary, do not attempt to repair LP gas system components.

13. Trailers stored in enclosed garages must be well ventilated. If not ventilated, then remove the LP gas cylinders and store them in a covered and ventilated position outside.

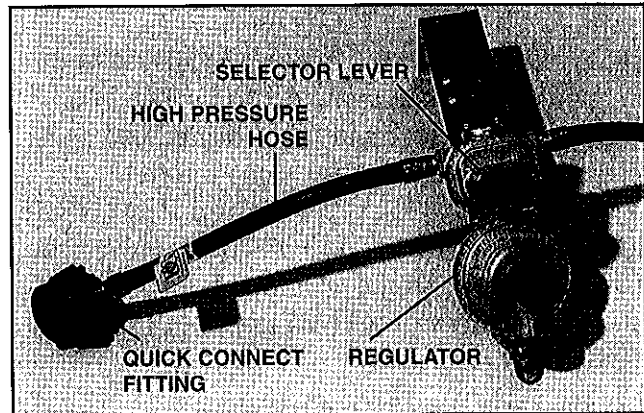
14. DO NOT modify or alter the LP gas plumbing system.

15. If any appliance or piping has been serviced, ensure that a system leak check has been performed by a trained technician. This should be verified before taking delivery of the unit.

SYSTEM COMPONENTS

Hoses and Fittings

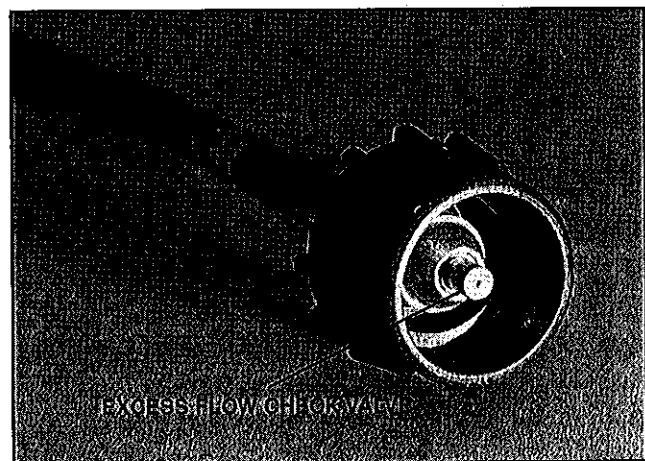
The hoses used in your LP gas system meet stringent requirements, and are rated to withstand many times the pressures encountered in the system. Check the hoses for weather checking or other signs of deterioration every time you have the LP gas tank filled or serviced. When you replace hoses, be sure that replacements are the same size, properly rated and approved for RV use.



LP GAS Components

The fitting at the end of the gas supply hose is the one with which you will most often come into contact – you will handle it many times during your trailer ownership to service and fill your LP cylinders. Turn it to the right to tighten, turn left to loosen. It does not require any type of pipe sealant. If it ever leaks or cannot be reasonably tightened without excess force, replace the complete hose assembly and/or have the cylinder valve checked and serviced.

This fitting contains an excess flow valve to restrict gas flow if the flow exceeds the valve design output. Note that it is not designed to detect a leak or to totally shut down the system if a failure occurs.

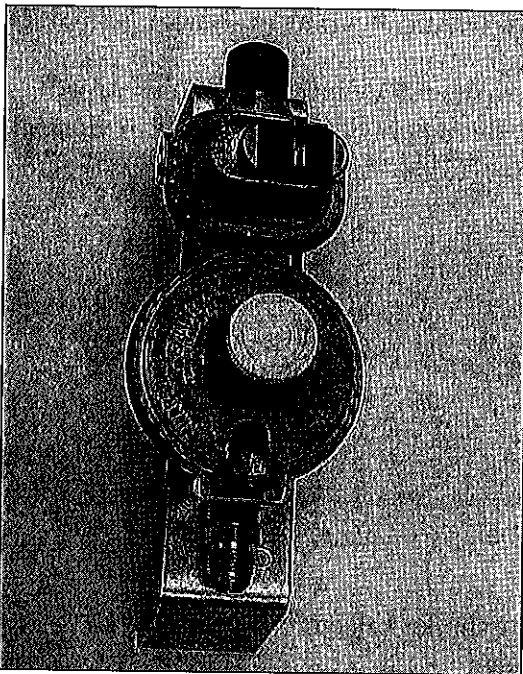


Hose Fitting

LP Gas Regulator

The two-stage regulator produces approximately 11 inches of water column (less than 0.5 psi) to serve your appliances. Be sure the regulator vent stays clean and free from obstructions.

The regulator is mounted so that the vent is facing downward and is protected by a cover. Be sure the cover is on at all times. If the vent becomes clogged, it can be cleaned with a toothbrush. If corrosion is evident, contact a qualified LP gas service technician for assistance.



Regulator (cover installed)

The regulator incorporates a feature known as “automatic changeover.” Gas systems used in trailers are designed to operate from two separate LP gas cylinders, and the auto changeover allows continuous gas supply, when one cylinder runs out.

In a dual cylinder system, you start out with two full cylinders of gas. Position the cylinder selector lever all the way toward the cylinder that you want to use first, this will be your “service” cylinder. The other cylinder will be your “reserve” cylinder. Make sure all appliances and pilot lights are turned off. Open both cylinder valves and

wait until the regulator indicator turns green before attempting to light and appliance. A green regulator indicator means that the system is pressurized with LP gas.

When the service cylinder runs out of gas the regulator indicator will turn red. This means that you are drawing LP gas from the “reserve” cylinder. Before you disconnect the empty cylinder you must position the cylinder selector lever over to the “reserve” cylinder, making it the “service” cylinder.

The indicator will turn green and it is now safe to disconnect the empty cylinder. The rule of thumb is “do not disconnect a cylinder if the indicator is red.”

After filling the empty cylinder, hook it back up and open the cylinder valve.

WARNING

When removing an empty cylinder, position the regulator selector lever to the full cylinder. Failure to do so will result in LP gas escaping out of the pigtail.

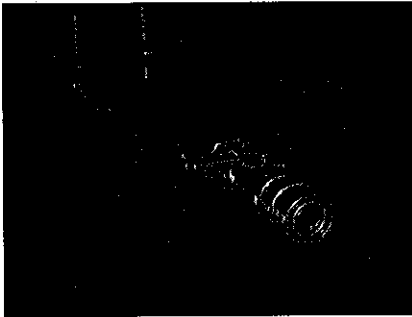
WARNING

Do not attempt to adjust the regulator. It has been preset by the regulator manufacturer. If any adjustment is required, it must be made by a qualified LP gas service technician using special equipment.

EXTERIOR LP GAS SUPPLY OUTLET *(If Equipped)*

The exterior LP gas supply outlet is intended for outdoor use only. Consult the instructions provided by the device manufacturer for information concerning proper connection and usage.

LP Gas System



Exterior LP Gas Supply Outlet

WARNING

In order to prevent property damage and possible fire, operate all heat producing appliances a safe distance away from sidewalls, luggage doors, or any other combustible materials. Never disconnect the LP gas supply outlet while smoking or with an open flame nearby. A small amount of LP gas will be released from the disconnect. Fire or explosion may occur if the LP gas contacts the open flame.

USING LP GAS SYSTEM AT LOW TEMPERATURES

Your LP gas system will function at low temperatures, provided the system components are kept at a temperature above the vapor point of the LP gas. Ask your LP gas supplier or your travel trailer dealer for information on product blends available in your area and the areas in which you will be traveling.

The following chart shows the reduction in available BTU's/hour under various fill levels as the temperature drops:

% FULL	20 LB. TANK*				
	+ 20°	0°	-5°	-10°	-15°
60%	36,000	18,000	12,750	8,500	4,250
50%	32,400	16,200	12,150	8,100	4,050
40%	28,800	14,400	11,400	7,600	3,800
30%	25,200	12,600	10,450	7,300	3,150
20%	21,600	10,800	8,100	5,400	2,700
10%	16,200	8,100	6,075	4,050	2,025

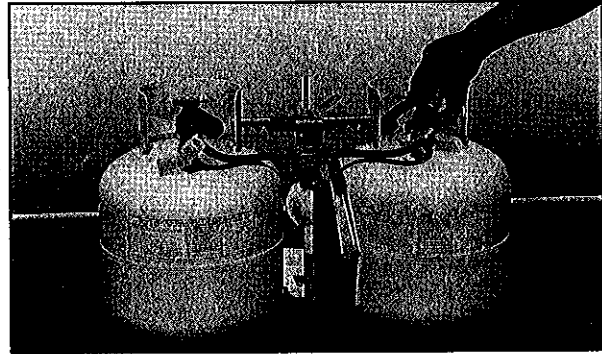
*30 lb. Tank multiply x 1.40

The chart clearly shows how the availability of the gas is reduced at lower temperatures. With this in mind, keep your LP gas tank as full as possible during cold weather. Check the BTU/hr rating plates on your LP gas appliances. This information will help you manage your LP gas usage.

FILLING LP GAS CYLINDERS

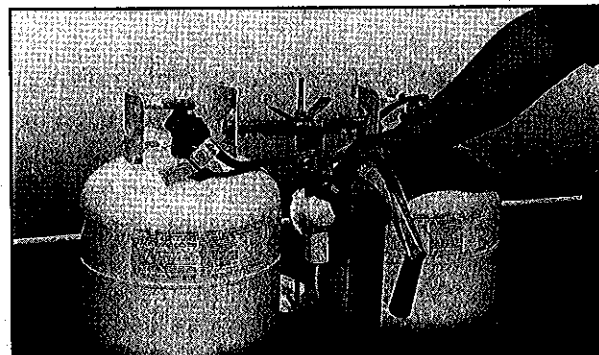
To fill the storage cylinders, the cylinders must be removed from the trailer and taken to an LP gas supplier or one of the service stations which sell LP gas. (Vertical cylinders shown)

1. Remove the LP cylinder cover (if equipped).
Close the supply valve on the empty cylinder.



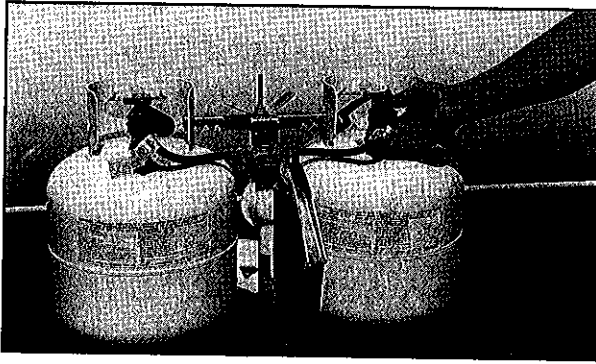
Close Empty Cylinder Valve

2. Turn cylinder selector lever to the full cylinder.



Switch Cylinder Selector Lever to Full Cylinder

3. Disconnect the hose fitting at the valve.
Turn it to the left (clockwise) to loosen.



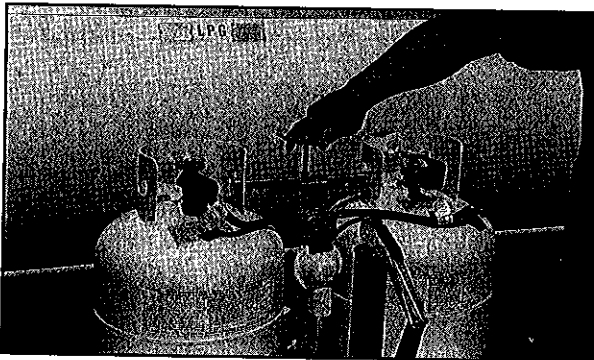
Loosen & Remove Fitting & Hose

4. Install the plastic cap over the cylinder valve outlet. Be sure it is clean. This will help protect the valve fitting threads and will prevent contamination or debris from entering the valve during transportation to a gas service facility.



Install Cap

5. Loosen the wing nut on the threaded rod. It should be loosened just enough to allow the hold down bracket to clear the empty cylinder.



Loosen Wing Nut

6. Remove the empty cylinder, and have it filled.



Remove Cylinder

7. Reverse the procedure to replace the cylinder.

WARNING

Your trailer has been equipped with LP gas containers that feature an overfill protection device (OPD). NFPA 58 (LP Gas Code) states that these portable cylinders shall not be filled without this device.

Do not under any circumstances use an older non-OPD cylinder. Inadvertently overfilling of pre-OPD cylinders can result in uncontrolled gas flow that in unvented surroundings can cause fire and/or explosion.

WARNING

Turn off LP gas main valve before filling LP gas tank or entering an LP gas bulk plant or motor fuel service station. Turn off all pilot lights and appliances individually before refueling of motor fuel tanks and/or LP gas containers. When not individually turned off, automatic ignition appliances may continue to spark when LP gas is turned off at the container.

LP GAS SYSTEM CHECK

Do a visual check of all exposed piping and fittings after you have arrived at a destination and before you use the LP gas system.

Keep the cylinder valve closed and turn off all appliances if the unit is not being used.

Always have the system checked by a professional any time you detect a garlic/rotten egg like odor or hear a sustained hiss when you turn the LP gas on.

LP Gas System

WARNING

Never check for leaks with an open flame. Do not check copper and brass plumbing lines and fittings for leaks using ammoniated or chlorinated household type detergents. These can cause cracks to form on the line and brass fittings. If the leak cannot be located, take the unit to an LP gas service representative.

LP GAS LEAK DETECTOR/ALARM

A permanently installed LP gas leak detector/alarm is located near the floor. The unit contains an alarm that will sound alerting you to the presence of low levels of potentially dangerous LP gas that may have accumulated.

The detector/alarm unit is powered by the 12-volt DC system in your trailer. A green light on the detector/alarm front panel indicates that the detector/alarm has power.

Test the leak detector/alarm each time the trailer is relocated and set up for use. Detailed information for the leak detector/alarm can be found in the *Owner's Information Package*.

Testing Procedure:

1. Hold a butane-fueled pocket lighter near the sensor.
2. Open the lighter valve without striking the flame.
3. The leak detector/alarm should respond within a few seconds.
4. Press the silence button to reset the alarm.
5. Lightly fan the area around the detector/alarm to insure complete dispersion of the gas from the lighter, and to prevent another sounding of the alarm.
6. A silence button allows you to temporarily quiet the alarm for 60 seconds after it has been set off or after testing.
7. If the alarm does not sound during a test or if the green indicator light is not visible, see your dealer or any authorized Fleetwood dealer. There are no batteries or user serviceable parts inside the unit.

WARNING

If your trailer is equipped with battery disconnect devices, the LP gas leak detector/alarm will not function if battery disconnect(s) are OFF.

NOTE

The detector/alarm draws enough current to discharge your battery. Remember to turn off the house battery disconnects if you are not using your trailer.

LIGHTING LP GAS APPLIANCES

Detailed operating information for the LP gas appliances can be found in your *Owner's Information Package*. Please read and follow these instructions.

Air trapped in the gas lines may delay the initial lighting of any appliance. It could take several seconds or minutes for the gas to reach the appliance. To purge some of the air from the gas system, first light a burner on the range. The other appliances will then light more quickly.

The first time the furnace or oven is operated, paints and oils used in its manufacture may generate some smoke and fumes. If this occurs, open doors and windows to air out the trailer. These materials should burn off after the first 15 to 20 minutes of appliance operation.

Always follow the appliance manufacturer's lighting, operating and maintenance instructions.

WARNING

The LP gas detector/alarm is powered by a 12 volt source. Any interruption in power will render this alarm inoperative. Always ensure power is applied especially when appliances are in use.

PROPANE SAFETY TIPS

Rules to remember

- Keep propane cylinders/tanks away from heat sources.
- Always store and transport unused cylinders with the service valve closed and plugged/capped.
- Never store, transport or repair propane cylinders in enclosed areas. In addition to living area, this also includes enclosed garages, storage sheds, passenger vehicles and tents.
- Regularly inspect "pigtailed" and other flexible hoses for signs of cracks or abrasion. Replace them before they become old enough to develop leaks.
- Never use a cylinder if it shows signs of dents, gouges, bulges, fire damage, corrosion, leakage, excessive rust or other forms of external damage.

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APPLIANCES

The appliances installed in your trailer are tested and listed, and comply with standards established by these organizations. All appliances are covered by Fleetwood's *Ownercare Warranty* program. Each appliance is also warranted by its manufacturer.

✓ NOTE

The individual appliance manuals included in your **Owner's Information Package** contain detailed operating and maintenance instructions. Always refer to the respective manual for the appliance in question.

⚠ WARNING

The water heater and furnace combustion air exhaust ports may be hot when the water heater and furnace are operating. Do not touch these outlets or allow any material to come near the exhaust ports while operating the water heater and/or furnace.

WATER HEATER

The water heater operates on LP gas, or, if so equipped, with 120-volt AC power, and is much like the one in your home. It contains an automatic shut off valve which stops the gas supply if the water temperature rises too high.

The water heater is reached through an access panel on the outside of the trailer.

Turn on the hot water faucet at the galley sink. If water flows continuously the heater is full.

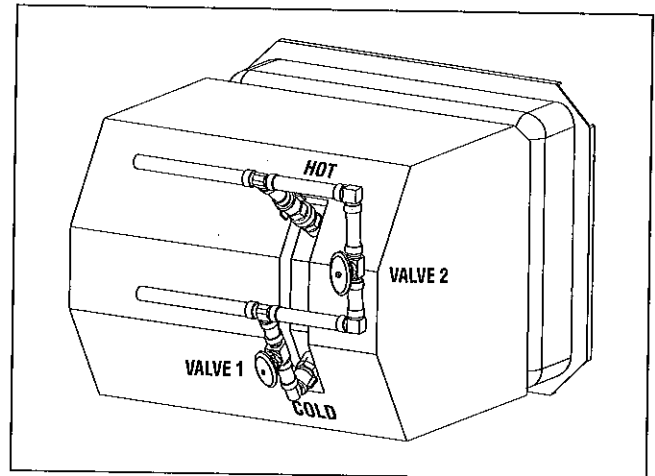
⚠ CAUTION

Do not light water heater until it is filled with water.

Water Heater Bypass Valve

If your trailer is equipped with a two-valve water heater by-pass system, close the valve at the lower entrance of the water heater (valve 1)

by turning it clockwise. Open the valve at the upper entrance to the water heater (valve 2) by turning it counterclockwise. To restore normal water heater operation, reverse the procedure.



Pour approximately three to five gallons of non-toxic RV approved water system antifreeze into the fresh water tank if equipped with a water heater bypass; if not equipped, use seven to ten gallons.

REFRIGERATOR

Read the operating instructions furnished in your *Owner's Information Package*. Before operating the refrigerator when the trailer is parked, make sure it is level. If it is not level, the refrigerant will not circulate, cooling action will stop, and the refrigeration system may be damaged.

The refrigerator uses the absorption principle of operation. If you plan to cool food or drinks in high outside temperatures, precool the food, and, if possible, park the trailer with the refrigerator vent door in the shade. Once the interior of the refrigerator is cool, the refrigeration system will usually maintain this temperature. If the inside of the refrigerator is hot, the food is not precooled, and the outside temperature is high, it will take longer for your food to be cooled.

Appliances

FURNACE

The furnace is a forced-air unit fueled by LP gas. All furnaces are equipped with a wall thermostat for temperature setting.

The furnace will not operate properly if your stored personal items block the free flow of air at the registers or the return air to the furnace. Storage under cabinets should be done carefully so as to not crush or damage any furnace ducting.

Smoke and fumes created as a result of burning off manufacturing compounds are sometimes present the first time the furnace is used. This is normal; however, when you light the furnace the first time, open all windows and doors until the residues are completely burned off.

Always follow the appliance manufacturer's lighting and operating instructions.

If the furnace does not keep you comfortably warm, NEVER use the range, oven or a catalytic heater for supplementary heat — even with a vent or window open.

Combustion air for the furnace comes from outside the RV. The products of combustion from the furnace (carbon dioxide, carbon monoxide and other gases) are returned to the outside air.

WARNING

Portable fuel-burning appliances are not safe for heating inside the trailer. Asphyxiation or carbon monoxide poisoning can occur.

RANGE

The gas oven and burners are operated with LP gas. The basic operation is the same as the range in your home.

A warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Proper ventilation when using the cooking appliances will prevent the dangers of asphyxiation. Refer to

Lighting LP Gas Appliances section in the *LP Gas System* chapter of this manual.

When you use the range oven for cooking or baking, always open a vent or window to provide ventilation. Never operate the range or oven when you are sleeping or if your alertness is impaired in any way.

WARNING

Do not use open flames to warm the living area. Gas combustion consumes the oxygen inside the trailer.

RANGE EXHAUST HOOD

The exhaust hood allows vapors and cooking odors to escape, and may provide a vent for the galley area. Switches for the fan and light are located either on the range hood or the front of the microwave. The hood has grease filter screen(s) which require periodic cleaning. To clean, remove the screens and wash in soapy water. Rinse with water and let the screens drain dry.

If needed, replace the light bulb with an equivalent type found on the bulb or listed in the appliance owner's manual.

ADDITIONAL 12-VOLT EQUIPMENT

If additional equipment requiring 12-volt power is installed in the trailer. Obtain the 12-volt source from a properly fused battery circuit. Consult an authorized Fleetwood dealer before adding any additional equipment to your trailer.

120/12-Volt Televisions (If Equipped)

The 120-volt/12-volt TVs are set up to operate on a 12-volt power source (battery) as the trailer is delivered. Extended use of the TVs on 12-volt power can drain the batteries. The front TV operates on 120-volt only.

The TV can also operate on 120-volt power from the generator or public utility. To use the TV on 120-volt power, remove the 12-volt cord from the rear of the TV and install the 120-volt cord.

VIDEO SWITCHER (If Equipped)

The video switcher, located near the VCR, allows routing of the antenna, cable or VCR signals to both the front and rear TVs independent of each other. You can also use the switcher to record or pass through the signals from the antenna or cable hookup.

MICROWAVE OVEN (If Equipped)

The microwave oven is powered by 120-volt AC power and will only operate when connected. A wall receptacle for the microwave is located in the overhead cabinet adjacent to the microwave cabinet.

WASHER/DRYER-READY OPTION

If your RV is equipped with an electric dryer-ready option, and if an electric dryer is installed in the future by either you, your dealer or another appliance installer, the installation must comply with the following instructions:

1. The clothes dryer moisture-lint exhaust vent duct must not be connected to any other duct, vent, or chimney.
2. The exhaust duct must be of sufficient length so as not to terminate beneath the recreation vehicle.
3. The exhaust duct must not be connected with sheet metal screws or other fasteners that extend into the interior of the duct.
4. The exhaust duct and termination fittings must be installed in accordance with the appliance manufacturer's printed instructions.

MISCELLANEOUS APPLIANCES

You may have additional appliances in your unit which operate only when connected to 120-volt power from either a public utility or the generator.

In some cases, appliance selector switches are provided in the galley to allow you to select combinations of appliances yet still remain within the power capacity of the electrical system.

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ENTRY STEP

Folding or sliding entry steps are located under each entry door. Some models may have single, double or triple steps.

To extend the double or triple step:

- Pull complete step assembly out; let it down completely.
- Unfold bottom step(s) from over top step; lower completely.
- Reverse to retract.

To extend the single step:

- Pull complete step assembly out; let it down completely.
- Reverse to retract.

ENTRY DOORS, SCREENS, AND LOCKS

Entry door locks and deadbolts are keyed separately. Write down all key numbers in the *Identification Information* section of this manual.

The screen door may be separated from the main entry door. A holdback mechanism will secure the main door against the side of the trailer.

It is always a good idea to lock the entry door deadbolt(s) before traveling. This will reduce the possibility of the door(s) opening on the road.

WINDOWS

Windows in your trailer are either slider or torque pane type. Open slider windows by rotating the locking lever and sliding the window. Open and adjust torque windows by turning the knob or crank located at the bottom of the window frame.

On your ventilating windows, water is trapped by the frame. During a heavy downpour or washing, water may be seen in the lower portion of the frame. The sloping sill and weep slots allow the water to drain to the outside. These weep slots must be kept open.

If water collects in the bottom channel and overflows, check the weep slots for debris and obstructions and clean as necessary.



NOTE

Screens are not removable for cleaning. They may be pushed out of their frames if the window must be used for emergency exit. In this case, the screens will be destroyed and will probably have to be replaced.

Emergency Exit Window(s)

Emergency exit windows are identified by the red handles and EXIT label. Storm windows should never be installed over emergency exit windows.

Read and understand these instructions before you need to use them. The emergency exit window provides an escape route in case the trailer must be evacuated under emergency conditions.

To operate the emergency exit window, either:

- Pull the red handle and remove the screen, or;
- Lift the red latch to release the window. Slide it completely through the slot so the window swings free.

When parked, be sure the exit window is not blocked by trees or other obstacles.

FREE-STANDING FURNITURE (If Equipped)

When preparing for travel, secure free-standing furniture. Lamps, chairs, tables, or other items if left unsecured can move around inside the trailer while traveling and can be damaged or damage other furniture, cabinetry, or flooring.

Equipment

DINETTE CONVERSION

(With Built-in Table)

To convert the dinette into a bed:

- Remove cushions.
- Lift table, reach underneath, unlatch and fold the leg(s) up under the table top, or remove the table leg(s) and if necessary, store them between the seats.
- Raise front portion of table several inches to disengage inserts from the wall supports.
- Lower table top to the dinette frame to complete the bed base.
- Slide seat and back cushion into place over the bed base.

The under-seat storage may be reached by raising the cushion platform.

- Lower table top to dinette frame to complete the bed base.
- Slide the seat and back cushion into place over the bed base.

SOFA CONVERSION *(If Equipped)*

To convert a sofa bed into a bed:

- Remove sofa bolsters (if applicable).
- Lift front of sofa seat (above front kick panel) up and out. The back of the sofa will drop back and down as the seat is pulled outward.

To restore the sofa/lounge:

- Lift the front edge of the sofa seat up, and push it back towards rear. The sofa back will come up.
- Push the sofa fully into position.

DINETTE CONVERSION

(With Free-Standing Table)

To convert the dinette into a bed:

- Lift table, reach underneath, fold up the legs under the table top. Secure the legs.
- Lower table top to the dinette frame to complete the bed base.
- Slide the seat and back cushion into place over the bed base.

The under-seat storage may be reached by raising the cushion platform.

SLEEPER SOFA CONVERSION

(If Equipped)

To convert a sleeper sofa into a bed:

- Remove sofa cushions.
- Lift front of sofa seat (above front kick panel) up and out. While lifting the seat out, the middle legs will automatically unfold into a vertical position.
- Pull upward on the center of the metal bar, and rotate it down slowly until the wood bars rest on the floor.

To restore the sleeper sofa:

- Lift the front edge of the bedframe up and rotate it back.
- Lift the middle section of the bed up and push it back towards the rear until the bed is fully into position.
- Replace the cushions.

NOTE

Lower the dinette table to the bed position before transporting the trailer.

DINETTE CONVERSION

(With Pedestal Table)

To convert the dinette into a bed:

- Lift table to disengage from pedestal tubes.
- Remove tubes from floor bases and store.

FOLDING DOORS/PRIVACY CURTAIN DIVIDERS

The dividers allow you to separate areas in the trailer. They glide on nylon rollers. They are held closed by a catch. When the dividers are open for traveling, be sure to attach the hold back latch to keep them from sliding back and forth.

INTERIOR LIGHTING

Both decorative and 'utility' style 12-volt lighting fixtures may be used in your trailer. Utility style fixtures may be either single or dual. A slide switch selects either single or dual brightness. For your convenience, some lights are operated from wall switches. Clean the lenses with soapy water.



CAUTION

Some of the lighting fixtures may be equipped with halogen bulbs. The bulbs and fixtures may get very hot when they are on. Do not touch these lighting fixtures when they are on. Allow them to cool before attempting to replace a bulb or to clean. Replace all light bulbs with the same type and wattage as originally installed or as indicated on the fixture.

OVERHEAD VENTS

Overhead vents may be located in the galley and bathroom areas for fresh air circulation and exhausting heat, odors and water vapor.

Turn the crank in the center of the overhead vent to open and adjust. Some vents may also be equipped with a 12-volt fan. A switch controls fan operation. Be sure to turn the fan OFF before closing the vent. Some vents may be connected to a wall switch.

Close the overhead vents or lower them before traveling to avoid damage from wind and low overhead clearances.

The vent may be cleaned from the top of the trailer. Use soapy water on the vent cover. The

screens may be vacuumed or lightly brushed to remove accumulation of leaves or other debris.

Lubricate the gears and mechanism yearly with a light, water resistant grease.

AIR CONDITIONER (If Equipped)

Air conditioners can operate only when the trailer is connected to 120-volt AC power from either a public utility or the generator. Be sure to turn the circuit breaker(s) ON. Some models provide a "distribution selector" switch to power the air conditioner or some other appliance. Be sure your switch is in the AIR CONDITIONER position.

For best performance, park the trailer in the shade and close window coverings. Close doors and windows and turn the temperature control knob for desired coolness. Adjust the air deflectors to your personal needs. Remember that the air conditioner consumes a large portion of your available electric power. Refer to the air conditioner manufacturer's instructions for detailed operation and preventive maintenance requirements.

Many models are equipped with hidden ceiling ducting to improve the flow of air to remote areas in larger trailers or fifth-wheels. These air conditioners are controlled by a wall-mounted thermostat.

Other models may be equipped with exposed ceiling ducting. These air conditioners are operated by controls on the air conditioner shroud.

Experience has shown that some RV parks may experience reduced power (low voltage) on days with high heat or humidity, commonly referred to as a "brown out." This condition may result in the air conditioner circuit breaker tripping in your power distribution center. This protects your air conditioner motor from damage and is necessary during low voltage conditions. This breaker tripping is sometimes perceived as a fault in your trailer, but it is a necessary "safety valve."

Equipment

SMOKE DETECTOR/ALARM

A battery-powered smoke detector/alarm is mounted on the ceiling in the living/cooking area of your trailer. Please read the smoke detector/alarm operating instructions for details on testing and caring for this important safety device.

Test the smoke detector/alarm after the trailer has been in storage, before each trip, and at least once a week during use.

The smoke detector/alarm should never be disabled due to nuisance or false alarm from cooking smoke, a dusty furnace, etc.

Ventilate your trailer with fresh air and the detector/alarm will shut off. **Do not disconnect the battery.**

Replace the battery once a year or immediately when the low battery BEEP signal sounds.

If the smoke detector/alarm fails to operate with new batteries, replace it with a new unit, available through an authorized Fleetwood Service Center.

FIRE EXTINGUISHER

The fire extinguisher furnished with your RV is rated for Class B (gasoline, diesel fuel, grease, flammable liquids) and Class C (electrical) fires. Read the instructions on the fire extinguisher. Know where it is located and how and when to use it. Remember that portable fire extinguishers are intended for use by the occupants of a building or area that is threatened by fire. They are most valuable when used immediately on small fires. They have a limited amount of fire-extinguishing material, and therefore must be used properly so this material is not wasted.

Fire extinguishers are pressurized, mechanical devices. They must be handled with care and treated with respect. They must be maintained as outlined in any maintenance instructions provided with the device so they are ready to operate properly and safely. Parts or internal chemicals may deteriorate in time and need replace-

ment. Always follow maintenance and recharging instructions provided by the fire extinguisher manufacturer. Maintain proper charge in the fire extinguisher.

CARBON MONOXIDE DETECTOR/ALARM *(If Equipped)*

Your trailer may be equipped with a carbon monoxide (CO) detector/alarm.

If the detector/alarm sounds, it is an indication that unacceptable levels of carbon monoxide gas are present. Sounding of the detector/alarm does not indicate a faulty detector/alarm. The detector/alarm is doing its job of warning you of potentially high concentrations of carbon monoxide.

Test the CO detector/alarm after the trailer has been in storage, before each trip, and at least once a week during use. Please refer to the materials included in your **Owner's Information Package**. Never remove the CO detector/alarm batteries for any type of storage.

ENTERTAINMENT EQUIPMENT *(If Equipped)*

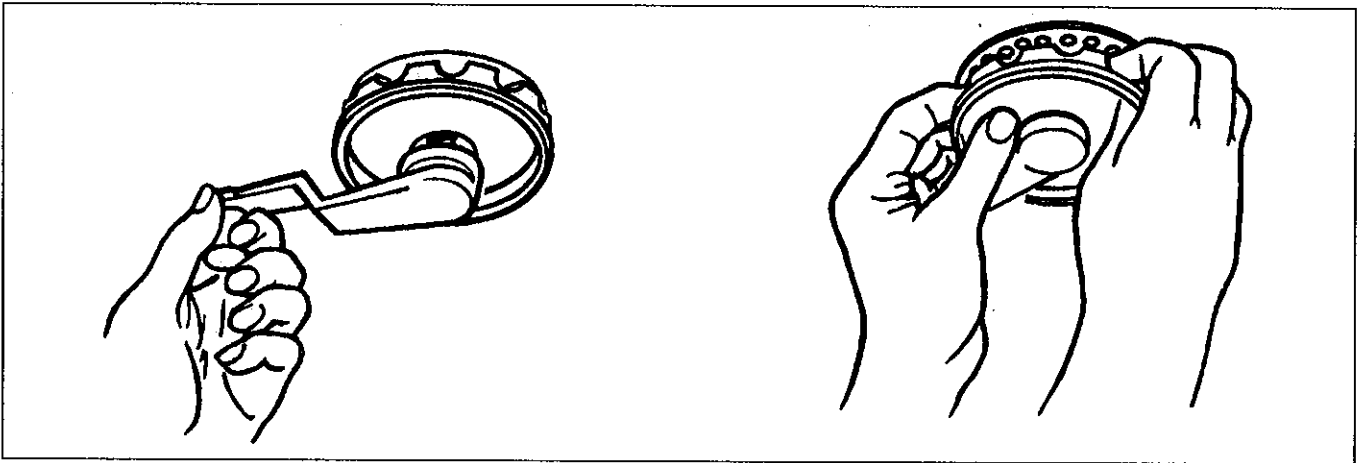
Instructional material for the optional entertainment system is included in your **Owner's Information Package**.

If additional entertainment equipment requiring 12-volt DC power is installed in the trailer, obtain the 12-volt DC source from the Fused Battery Circuit at the power converter. If you install entertainment equipment requiring 12-volts DC, a choke filter with an amperage rating matched to the current requirements of the equipment may be necessary to eliminate "hum."

TV ANTENNA *(If Equipped)*

The roof-mounted antenna is designed for reception of VHF and UHF television signals.

Before traveling, remember to lower the antenna



TV Antenna Operation

and secure it to prevent damage to the antenna, trailer roof, or objects in the path of the antenna, such as overhead wires. **Do not travel with the antenna raised.**



NOTE

The antenna booster power supply must be turned off to prevent battery drain. A red indicator light will glow when the unit is on.

Antenna Operating Instructions

Before raising antenna, check for clearance above the vehicle.

1. To raise the antenna to operating position, turn crank toward UP until you feel resistance. Switch the TV power to ON.
2. To rotate antenna, pull down on rotating knob with both hands until it disengages the ceiling plate. With the booster OFF, turn the antenna for the best picture and sound. If you can't get a "good" picture with booster off, turn on the booster. Do not rotate antenna except in the full UP position.
3. To lower the antenna, first rotate it to align the pointer on the ceiling plate. Then turn the crank toward the down position; stop when resistance is felt. Never lower antenna to any position without first aligning pointer.
4. **Do not force antenna.**

⚠ WARNING

Do not raise antenna near overhead electric wires as contact may cause serious injury.

SLIDE-OUT ROOM(S) (If Equipped)

Before operating the slide-out room, level and stabilize the trailer as described in the leveling and stabilization section in the *Living With Your Trailer* chapter. Position the stabilizer jacks making solid contact with the ground or other set-up surface. If the trailer is not leveled, the slide-out room and/or mechanism may be damaged. The stabilizer jacks will help keep the trailer square and assure a good weather-tight seal between the room and the trailer sidewall.

Remove all transit bars (two per slide-out) before operating the slide-out. The transit bars are rubber-tipped aluminum rods (similar to closet rods) with a yellow and red identification sticker.

Replace all transit bars before moving the trailer. Be sure all transit bars are in place.

Install transit bars at the top corners of the slide-out when the room is fully retracted.

If your trailer slide-out is electric powered, make sure the trailer batteries are adequately charged and/or connected to your tow vehicle.

Equipment

Connect your 120-volt electrical service cord (if possible) so the trailer's converter can supply a "charge" to your batteries.

Replace all travel locks before moving the trailer.

WARNING

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

CAUTION

Never attempt to move your trailer with the slide-out room(s) extended. Damage can occur to the slide-out or the trailer.

POWER GEAR® ELECTRIC SLIDE-OUT OPERATION

System Description

The **Power Gear®** slide-out room system ("slide-out") is a mechanical system using a rack and pinion actuating mechanism to move the room. The drive gears are driven by a high torque, 12-volt DC electric motor powered by the trailer battery. A rocker switch mounted on a panel on the wall controls room movement.

The system consists of three major components:

1. Two inner rail assemblies (one for bedroom and doormside slide-outs, if equipped). These rails support the room weight.
2. The 12-volt DC motor and drive shaft assembly.
3. The control panel allowing extension or retraction of the room. The control system can sense the load on the drive system and will stop the motor when the room is fully extended or retracted.

System Operation

During extension or retraction of the slide-out, you may hear noises such as creaks and squeaks. These sounds are normal. Some of the slide-out components need a "break-in" period so they can "seat" properly. After a dozen or so room cycles, these break-in noises should decrease. Please note that some noises associated with the electrical and mechanical systems will always be noticeable during slide-out operation.

If very loud noises continue after a reasonable break-in period, contact your **Fleetwood Dealer Travel Trailer Service Center**.

Always remember that when the slide-out room is extended, it is *outside* the trailer. Any environmental elements outside will affect the slide-out room. Rain, snow, ice, blown dust and dirt or other debris may cling to the outside surfaces of the room. When the room is retracted into the interior of the trailer, material clinging to the exterior walls may be brought into the trailer. Check the outside surfaces of the slide-out before retracting it. Brush or wipe off excess water, snow, dirt, insect webs or nests, leaves, or other debris. Be sure the outside surfaces of the slide-out are as clean and dry as possible. Be sure to remove any settled water on the awning before retracting the slide-out.

The seals around the outside of the slide-out room are not designed to "squeegee" off all water that may accumulated on the outside surfaces. Do not depend on them to remove the water. You must remove this water before retracting the slide-out.

Normal Operation

WARNING

Read and understand this Owner's Manual to avoid injury and/or property damage. Keep people and objects clear of the slide-out room during operation. The gear assembly may pinch or catch loose clothing causing personal injury.

CAUTION

The trailer must be level before operating the slide-out room. Adequate level is the same as required for proper refrigerator operation.

CAUTION

Remove the transit bars and/or any obstructions that may restrict the slide-out room movement.

CAUTION

Before extending or retracting the slide-out room, open a vent, window, or door. The vacuum or pressure created by moving the room could be strong enough to damage windows or doors.

To operate the slide-out room:

1. The trailer must be parked and leveled.
2. Remove the transit bars.
3. Press the control switch to **IN** or **OUT** depending on position of the room. The control will sense when the room is fully extended or retracted and will automatically shut off the motor, locking the room into place.
4. Release the switch.
5. Re-install the transit bars in the locations marked on the trailer wall.

If the slide-out room is not locked in the extended or retracted position, the weather seal will separate from the sidewall surface, causing water leaks. The transit bars should always be in place during travel and during storage when the slide-out is retracted. The transit bars will help to insure a good seal.

CAUTION

Do not move the trailer with the room extended.

Manual Override Operation

The slide-out room system can be overridden to retract the room in case there is an electrical power interruption or failure, or other system malfunction.

If the slide-out room will not move when the switch is pressed, check that:

the battery is connected and fully charged, and

the transit bars are removed and there are no other obstructions in the room's path



CAUTION

Disconnect all power sources before attempting to troubleshoot or work on the slide-out system or mechanism.

To manually retract or extend the main/door-side slide-out room:



NOTE

The procedure for manually retracting the slide-out room is the same for a main slide-out or doorside slide-out. See Figure 1 to locate the drive motor assembly for each slide-out room (if installed).



CAUTION

During manual retraction of the slide-out, confined quarters, pinch and crush hazards exist. Ensure that the slide-out path is clear of obstructions in the interior of the trailer and in the undercarriage area.

1. Confirm that the slide-out switch is centered (the OFF position), and the trailer battery is disconnected.
2. If the trailer has an underbelly locate and remove the access panel for the motor. Typically, the motor will be just inside the trailer chassis main rail (Figure 1).

Equipment

3. Locate the brake release lever on the back side of the motor (Figure 2). Rotate the lever **COUNTERCLOCKWISE** (looking from the rear or tail of the motor) about $\frac{1}{8}$ turn to release the brake mechanism that locks the room into place.
4. Locate the electronic control module for the slide-out system. Remove the wire plug-in connector. If the connector is not removed, the room will be very hard to move.
5. The room is now free to move. If the trailer has an underbelly, locate the access panel for the manual override. See Figure 1 for locations.
6. Be sure there are no obstructions in the slide-out room's path. Using a $\frac{3}{4}$ " socket or open end wrench on the end of the drive shaft, turn the shaft in the necessary direction to extend or retract the room. This will be a slow process. Be patient.
7. When the room is fully extended or retracted, the brake release lever on the

motor must be returned to its normal locking position. This will require another person. Continue to put pressure on the socket/wrench to ensure a tight seal while the other person turns the lock lever **CLOCKWISE** so it is pointed downward. This will lock the room into a sealed position.

8. When fully retracted, install transit bars and contact your **Fleetwood Dealer Service Center** for service, if required.

To manually retract or extend the bedroom slide-out room:

✓ **NOTE**

See the illustration to locate the drive motor assembly for the bedroom slide-out room (if installed).

1. Confirm that the switch is centered (the OFF position), and the trailer battery is disconnected.
2. Lift the mattress and bed base up to gain access to the slide-out unit.

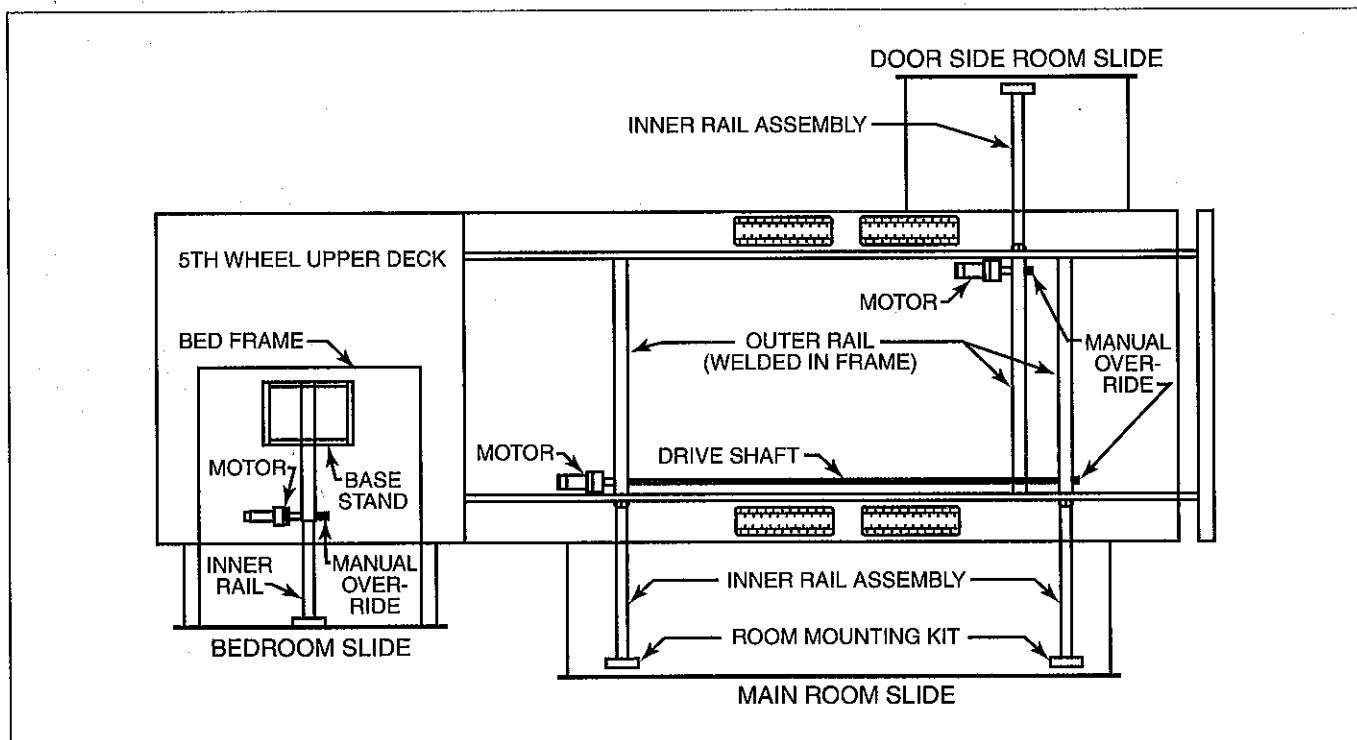


Figure 1 – Underfloor System Layout

3. Using a 1/2" wrench, loosen the four motor mounting bolts (Figure 2). Remove the slide-out motor.
4. Use an adjustable wrench on the square end of the drive shaft and turn the unit in/out.
5. When fully retracted, install transit bars and contact your **Fleetwood Dealer Service Center** for service, if required.

CAUTION

When the brake is released or the motor is removed, the room WILL NOT lock into place. It will not be sealed from the outdoors. When the room has been fully retracted, be sure to install the transit bars and turn the system brake to the downward position (or reinstall the motor) to seal and lock the room.

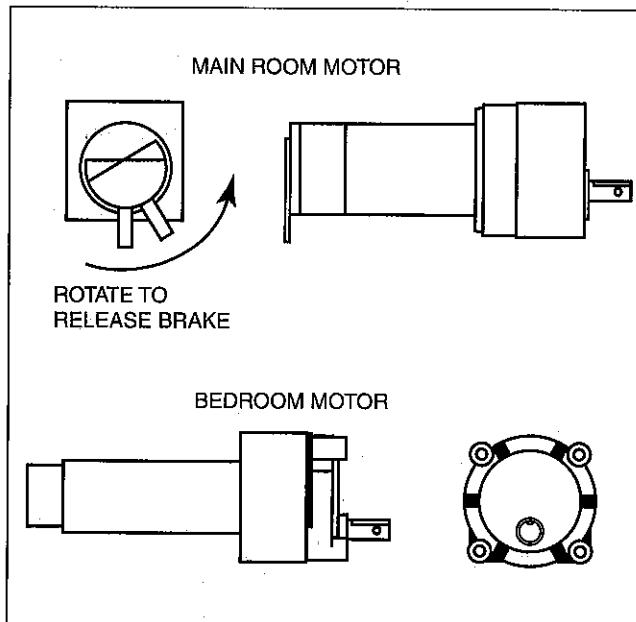


Figure 2 – Drive Motors

SYSTEM MAINTENANCE

Electrical System Maintenance

CAUTION

Disconnect all power sources (120V AC power to the converter, the battery, and the car connector) before performing any service work on the system.

The slide-out room system requires a minimum battery voltage of 12-volts. Be sure the battery is fully charged for best performance.

- Maintain the battery as outlined in the *Fleetwood Travel Trailer Owner's Manual*.
- Check the terminals and other connections at the battery, the control switch, and the drive motor. Be sure connections are tight, clean, undamaged, and corrosion-free.
- Pay special attention to the motor connections under the slide-out room. These connections are subject to road debris and weather elements. If necessary, remove the access panel under the trailer to inspect these connections and other mechanism parts.

Mechanical Maintenance

The slide-out room mechanism is designed to be almost maintenance free.

- When the room is extended, visually inspect the inner slide rail assemblies. See illustration. Check for excess buildup of dirt or other foreign material. Remove any debris or dirt buildup.

Equipment

- If the system squeaks or makes any noises, apply a coat of light weight oil to the drive shaft bearings and roller areas. Remove any excess oil so dirt and debris do not build up. *Do not apply grease to any part of the system.*
- During long-term storage, apply a seal dressing such as **303® Protectant** to the slide-out room weather seals, retract the room fully, and install the transit bars. The transit bars will insure a positive seal. **303® Protectant** is available at most RV supply stores.

CAUTION

After setup, the inside wall flanges of slide-out rooms are permanently secured to the main trailer exterior wall. Attempting to re-level the slide-out room without first removing all interior fasteners may cause damage.

Quality components are used throughout your trailer; however, local weather and atmospheric conditions will in time cause rubber and vinyl weather seals to need replacement, which are not covered beyond the term of your Ownercare Warranty.

Slide-out setup, adjustments, and re-leveling are owner responsibilities which are not included in the selling price of your trailer. Therefore, your dealer will charge to perform these services. Professional setup, adjustment, regular maintenance, and replacement of weather seals as soon as required will extend the life and usefulness of your slide-out room. Weather seals which are allowed to remain in service after deterioration will allow rain, snow, or ice to penetrate inside the walls or roof and may cause extensive damage which can be very costly to repair.

Do a close visual inspection of these seals at least twice each year – once before the winter season and again each spring.

Vinyl flaps used to cover slide-out to main trailer joints should remain flexible and in place. Over a period of time, they will stiffen, become brittle and crack. The aging process will vary in time depending on local conditions and exposure to the sun's ultraviolet radiation.

Rubber seals used between the joints, where the slide-out inner frame meets the main trailer inner walls, are protected from sunlight and will last longer than exposed seals. As these are hidden from view and you cannot visually inspect them, any evidence of water inside the slide-out or evidence of wind leakage inside the slide-out area should be investigated. The inner rubber seal may have deteriorated. Replacement of the rubber seal should be done by your dealer, as it will be necessary to partially disassemble the slide-out room.

System Troubleshooting

Four interrelated components – the trailer chassis, the trailer body, the slide-out room, and the slide-out room electrical/mechanical system – make up a slide-out room system. Each needs to function properly with the others. Every unit has its own characteristics. Symptoms of malfunction may appear to be the same, but troubleshooting and fixing a problem must include a thorough check of all the interrelated components.

When something restricts room travel, the drive mechanism is designed to stop. If the room is restricted, the system may put undue pressure on the trailer chassis, body or slide-out room. The room may not seal properly, and the obstruction may cause fatigue and premature system failure.

Before troubleshooting the system or contacting and authorized **Fleetwood Dealer Travel Trailer Service Center**, make sure the battery is fully charged, and there are no obstructions to room movement.

Troubleshooting Chart

The following troubleshooting chart outlines some common problems, their causes and possible corrective actions.

Room doesn't move when switch is pressed	
Room transit bars installed	<i>Remove room transit bars</i>
Low battery voltage, tripped circuit breaker, defective wiring, especially ground connection	<i>Check battery charge condition. Charge battery or add auxiliary power source. Check battery terminals, and all other wiring. Look for loose/corroded connectors, especially ground connection.</i>
Motor not functioning	<i>Contact authorized Fleetwood Dealer Service Center.</i>
Motor runs, but room does not move	
Drive coupler or shaft broken	<i>Contact authorized Fleetwood Dealer Service Center.</i>
Gears stripped	<i>Contact authorized Fleetwood Dealer Service Center.</i>
Obstruction in room path	<i>Check room path. Be sure no furniture, clothing, hardware, or other item(s) are jammed in the room's path. Clear obstructions before operating room.</i>
Motor runs, but room moves slowly	
Low battery, poor ground, extremely low outdoor temperature	<i>Charge battery, check ground, wait for warmer temperature.</i>
Motor brake not releasing correctly	<i>Contact authorized Fleetwood Dealer Service Center.</i>
Obstruction in room path	<i>Check room path. Be sure no furniture, clothing, hardware, or other item(s) are jammed in the room's path. Clear obstructions before operating room.</i>

Equipment

Troubleshooting Chart (Cont.)

Room begins to move, then the system shuts off

Transit bars installed

Remove transit bars

Obstruction in room path, debris between the gear and gear rack

Check room path. Be sure no furniture, clothing, hardware, or other item(s) are jammed in the room's path. Clear obstructions before operating room.

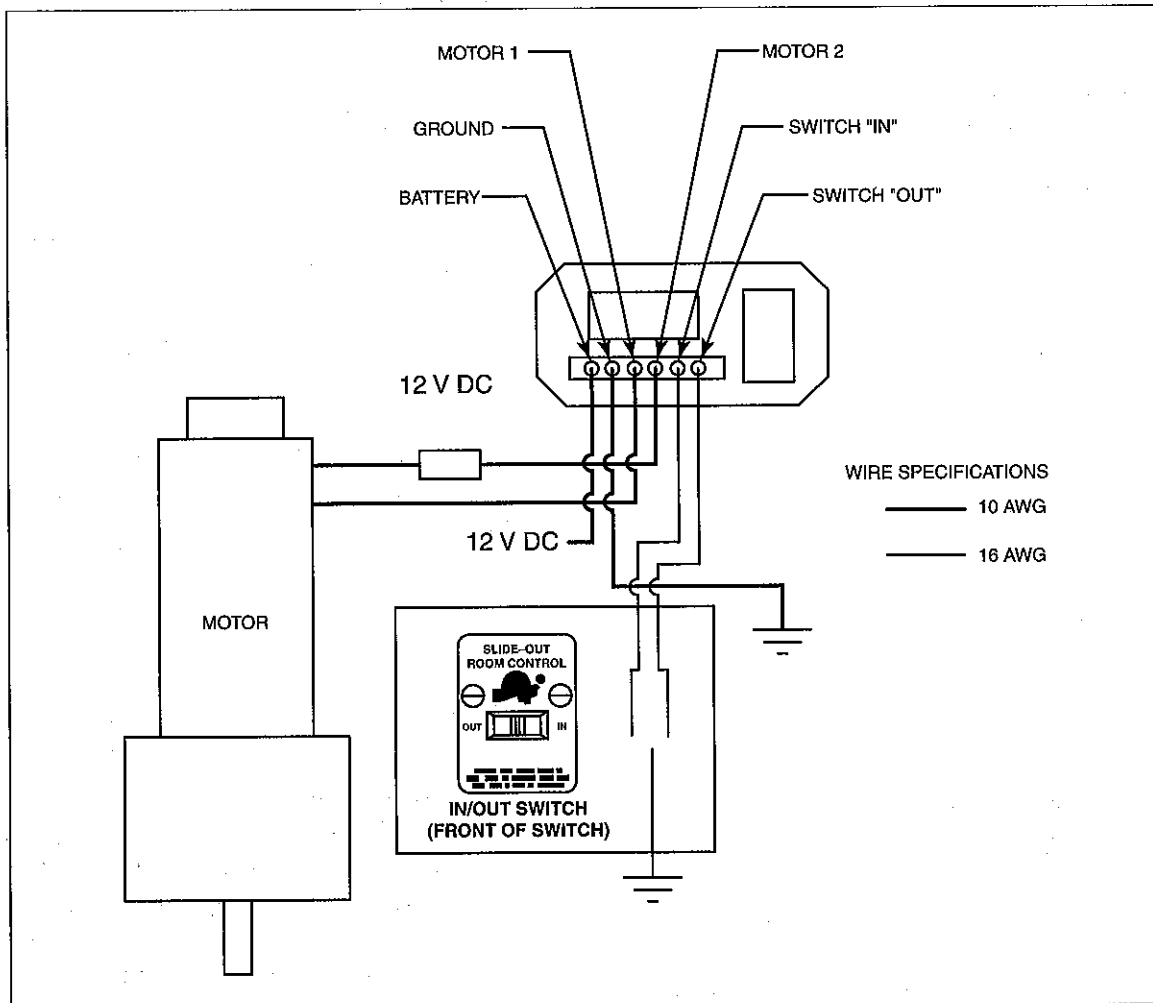
Dirt or corrosion buildup

*Lubricate as outlined in the **Mechanical Maintenance** section.*

Articulated or uneven room travel

Broken gear teeth, broken/sheared drive shaft or other component

Contact authorized Fleetwood Dealer Service Center.



Slide-Out System Electrical Diagram

Electrical Troubleshooting

Since there are no field serviceable parts in the motor or control system, electrical troubleshooting and service by the owner is limited to thorough checking of wiring and connections, checking the circuit breaker, and proper battery maintenance.

Contact an authorized Fleetwood Dealer Service Center for any other service requirements.

POWER JACKS (If Equipped)

Travel Trailers

The power hitch post jack is a 12-volt motor driven screw jack used to lift and lower your trailer during hitching, unhitching and leveling of your trailer. It is recommended that the car connector charge line be connected while operating this jack to reduce the power drain on your battery. Refer to the *Owner's Information Package* for operating instructions.

Fifth Wheels

The power landing gear is a 12-volt motor driven jack system used to extend and retract the landing gear during hitching, unhitching and leveling of your fifth-wheel. It is recommended that the car connector charge line be connected while operating this jack to reduce the power drain on your battery. The power control switch has been equipped with a key to prevent others from tampering with the landing gear on your fifth-wheel. We recommend you keep it locked OFF except when in use. Refer to the *Owner's Information Package* for operating instructions.

GENERATOR READY (If Equipped)

Some trailers are equipped with an optional generator ready package. This compartment is internally pre-wired for remote start and 120-volt AC connections in your trailer. A gasoline tank and generator fuel feed is also included in the package. The Fleetwood option package was specifically designed for installation of a

Generac 4.8 NP50G. Other installations may require modifications which have not been tested nor approved by Fleetwood.

WARNING

Generator installations require qualified technicians. Generator installations must comply with all manufacturer instructions and applicable codes.

Do not attempt to install a generator system unless you are trained and familiar with applicable codes and installation techniques.

WARNING

Before operating any generator, read and understand the **Generator** section of this manual and the manufacturer's operating instructions for your generator.

NOTE

The generator ready compartment door originally equipped with the trailer is not ventilated for generator installation and must be replaced. Contact the Fleetwood Service Department at the manufacturing plant to obtain a door. The door supplied provides a weather resistant exterior luggage compartment until such time as a generator installation is desired by the owner.

NOTE

You must purchase and install a carbon monoxide alarm in your trailer if you add a generator to your unit.

Generator (If Equipped)

Your trailer may be equipped with a gasoline or LP gas-powered generator which will provide complete electrical self-containment when regular public utility AC power is unavailable. Controls are at the generator and at a remote panel located in the living area of the trailer.

The 120-volt output of the generator is connected directly to a receptacle located inside the 120-volt cord storage compartment. With

Equipment

the generator power plant operating and the power cord plugged into this receptacle, power is available at all of the 120-volt power outlets in the trailer, just as if the cord were connected to an external source.

To start the generator:

1. Press **START** switch until generator is running.
2. To stop the unit, hold the switch in the **STOP** position until the engine stops completely. If you release the switch too soon, the engine will continue to run.

NOTE

Refer to your Generator Power Plant Manufacturer's Instruction Manual (provided in your **Owner's Information Package**) for service information before starting the generator. Do not attempt to start unit with a heavy power load connected. Always wait at least three minutes after starting generator before turning on (or plugging in) heavy electrical loads, such as the roof air conditioner or microwave oven.

If the generator is slow to start, **DO NOT** hold the switch in the **START** position for more than 10 seconds. Release the switch, wait 15 seconds, then try to start again. This will help avoid overheating and damage to the generator starting system.

Generator Operating Safety Precautions

- *Read and understand the generator operating, maintenance and safety precautions furnished in your Owner's Information Package.*
- *Do not fill fuel tanks while the engine is running. Fuel contact with a hot engine or exhaust is a fire hazard.*
- *Do not smoke or use an open flame near the generator unit or fuel tank.*

- *Do not use generator ventilating air for heating any space.*
- *Check engine fuel lines often. Fuel leakage in or around the compartment is an extreme fire hazard. Do not use the generator until fuel leaks are repaired.*
- *Check the generator fuel delivery and exhaust system after every 8 hours of operation.*
- *Do not modify the generator installation or exhaust system in any way.*
- *Check the generator exhaust for leak or damage after each trip and before setting up/leveling the trailer. Any damage or corrosion (if observed) present may indicate a leak. If in doubt, have a qualified technician examine and repair before using.*
- *Always check carbon monoxide detector for operation before switching on the generator.*
- *Disconnect the generator starting battery before performing any maintenance on the generator.*
- *Allow the generator to cool sufficiently before performing any maintenance on the generator.*
- *Do not use the generator as an emergency power source to a residential or industrial utility line. This is illegal and may cause shock or electrocution to power line utility personnel attempting to repair power lines.*

WARNING

Do not operate the generator when parked in or near high grass or brush. Exhaust component heat may cause a fire.

WARNING

Do not modify the generator installation or exhaust system in any way.

Do not use the generator as an emergency power source to a general residential or industrial utility line. This is illegal and may cause shock or electrocution to power line utility personnel attempting to repair power lines.

CAUTION

Do not block the generator ventilating air inlets or outlets. The engine requires a constant supply of cooling air. Restricted ventilating air inlets or outlets can cause engine failure.

WARNING

Exhaust gases are deadly. Inspect the generator exhaust system thoroughly before starting the generator engine. Do not block the tail pipe or situate the trailer in a place where the exhaust gases have any possibility of accumulating either outside, underneath, or inside your vehicle or any nearby vehicles. Outside air movements can carry exhaust gases inside the vehicle through windows or other openings remote from the generator exhaust. Operate the generator only when safe dispersion of exhaust gases can be assured, and monitor outside conditions to be sure that exhaust gases continue to be dispersed safely.

WARNING

Do not under any circumstances operated the generator while sleeping. You would not be able to monitor outside conditions to assure that generator exhaust does not enter the interior, and you would not be alert to exhaust odors or symptoms of carbon monoxide poisoning.

Generator Maintenance and Service

Specific maintenance requirements are outlined in the Operator's Manual for your generator. Follow these guidelines and/or refer to your dealer for assistance.

BATTERY DISCONNECT

(If Equipped)

The battery disconnect provides a convenient, safe means of disconnecting the trailer or fifth wheel battery. This feature is used primarily to disconnect the trailer 12-volt system during storage. The battery disconnect also provides you with a battery condition monitor to read the voltage level of your battery.

To disconnect the battery, press the "STORE/USE" switch to the "STORE" position momentarily. If no external power (120-volt shore power or generator) is applied to the system, the indicator light should go out.

To reconnect the battery, press the "STORE/USE" switch to the "USE" position momentarily. The indicator light should glow indicating 12-volt power is available.

You should also read the *Storage Precautions* in the *Electrical Systems* chapter dealing with the 12-volt system.

EXTERIOR SHOWER AND COMPARTMENT *(If Equipped)*

On some models an exterior shower head is mounted as a convenience to provide rinsing after swimming, hiking, fishing and other outdoor activities. When in an RV park, be sure to check the campground rules before using the exterior shower. In freezing weather, be sure to winterize or drain the hose.

SHOWER FAUCET

For your safety, the shower faucet is equipped with a vacuum breaker device. This device is designed to prevent backflow of water into the fresh water system, reducing the possibility of contamination of the water supply. When the faucet is in the OFF position with the shower hose held above the faucet, water will drain out of the vacuum breaker. This drainage is not a defect, but indicates that the faucet is working correctly.

Equipment

ROOF

The roof is not reinforced, and is not intended for storage or foot traffic. Walking on the roof can cause unseen structural damage under the roof material, damage to the underlayment and/or the roofing material, and may void the trailer warranty.

For maintenance or repair purposes, you must put down at least a 48" X 48" piece of plywood at least 3/8" thick to distribute the weight. While performing maintenance or repairs, use caution on the roof to avoid slips and falls.

PATIO AWNING (If Equipped)

An operating and maintenance guide for your awning is included in your *Owner's Information Package*. It contains complete instructions for opening and closing the awning, as well as maintenance and care instructions.

TELEPHONE JACK (If Equipped)

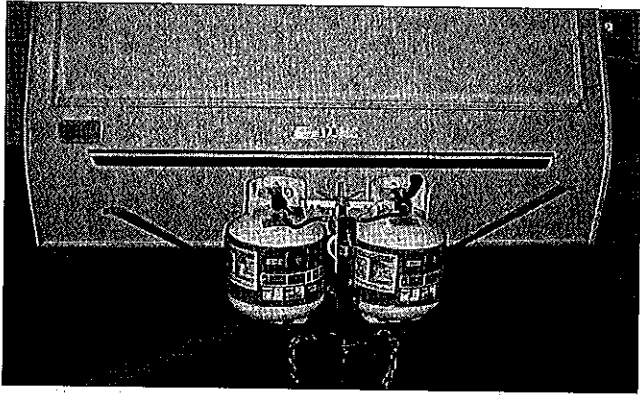
Your trailer may be equipped with an optional park telephone connection. An RJ-series jack is installed in the utility compartment. You must supply the proper mating cable and connector to hook-up to a telephone system.

SATELLITE SYSTEM (TVRO) WIRING (If Equipped)

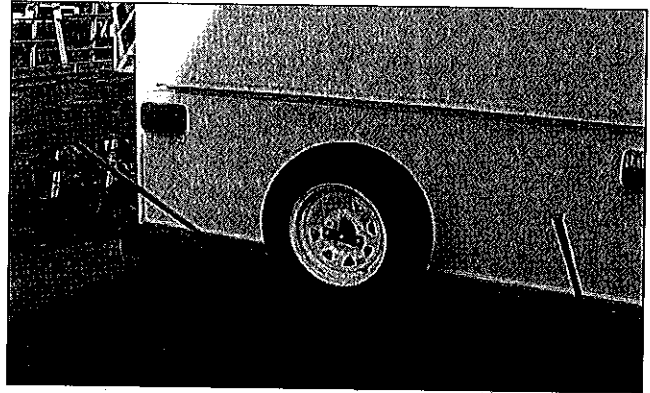
Your trailer may be pre-wired for installation of a satellite TV reception system. The cable loop is installed in the sidewall behind a plate. The mounting reinforcement for the satellite receiver dish is located approximately ten inches (10") forward of the ceiling plate.

Before installing and connecting a satellite receiving system, be sure you are familiar with the components you intend to install, other hardware or components required, and how they are designed to work together. Always refer to the component manufacturer's installation/operation information before installing or operating a satellite TVRO system in your trailer.

ULTRALITE TRAILER TENT SET-UP PROCEDURES

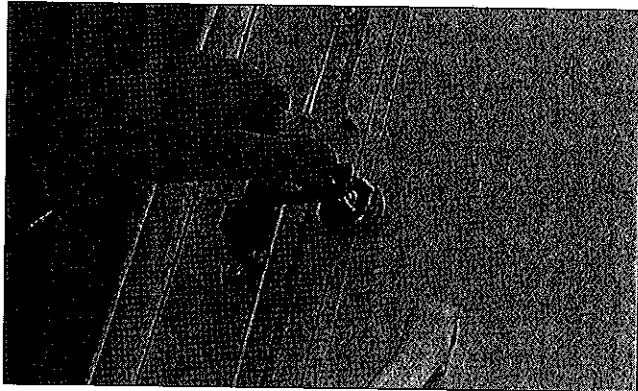


Front tent door support rods

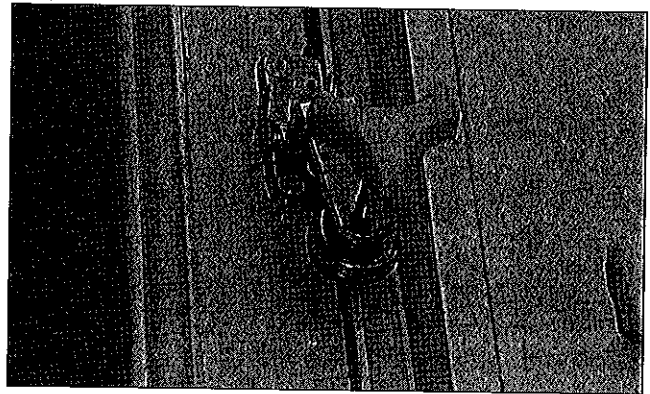


Rear tent door support rods

Locate the tent door support rods (two per door). Install them into the chassis socket retainers located on the A-frame of the trailer, and on the rear chassis main tube between the bumper and rear trailer wall.

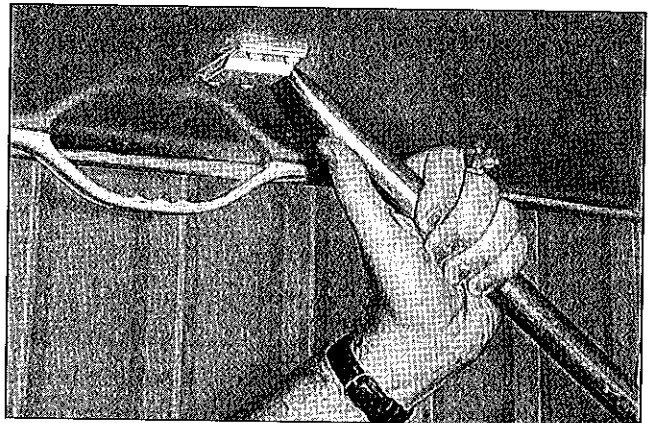
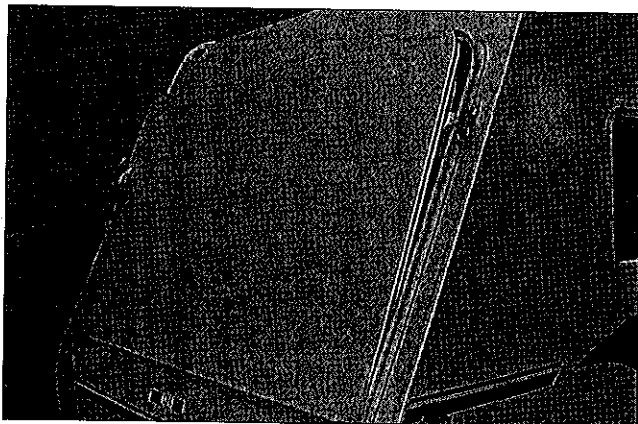


Turn knob counterclockwise



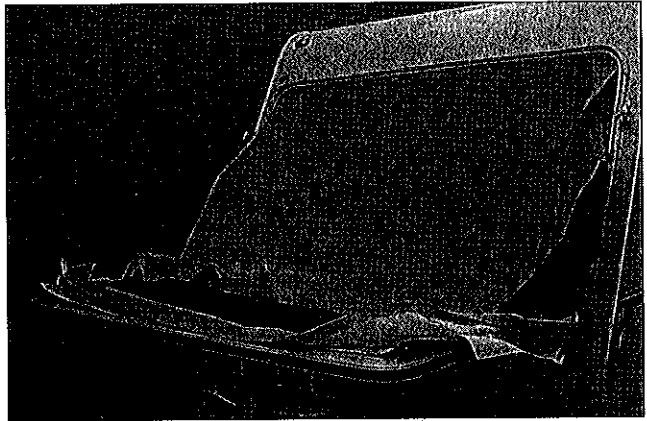
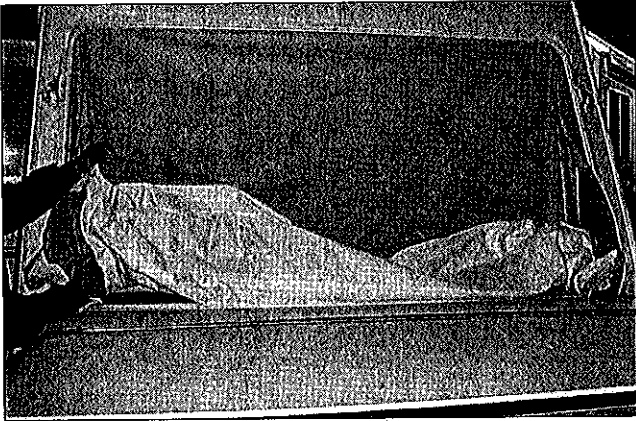
Be sure brackets are clear of door frame

Loosen the two tent door outer locks located on each side of the door by turning the knobs counterclockwise. Make sure the locks are clear of the tent door frame before lowering the door.

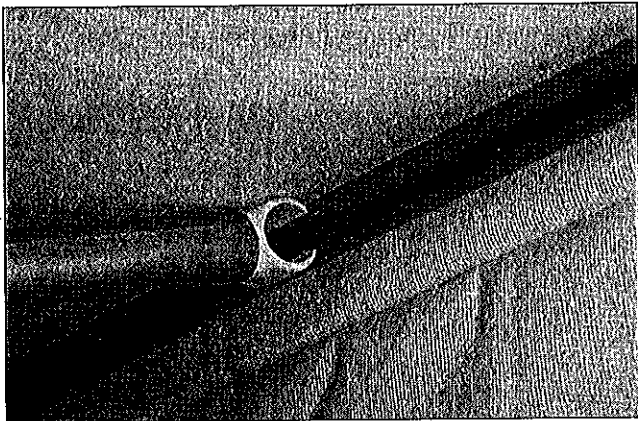


Carefully lower the door. Support the door in the middle as it is lowered. Install the two support rods securely into the door brackets located near the two outer corners.

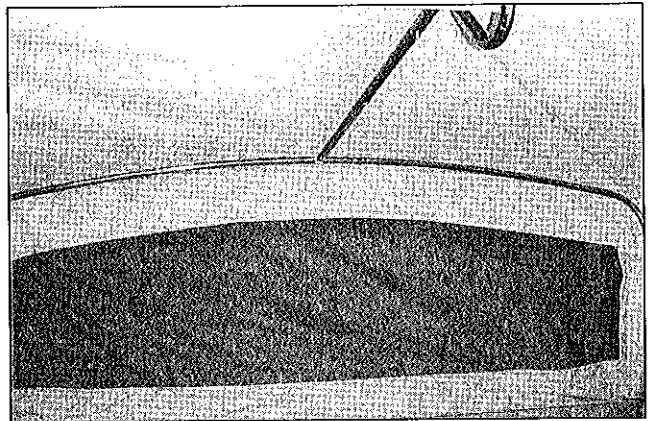
Ultralite Trailer Tent Set-Up Procedures



Carefully pull the tent fabric outward and extending the fabric around the outer edges of the tent doors. Wrap the tent around the two outer door corners in preparation of next step.

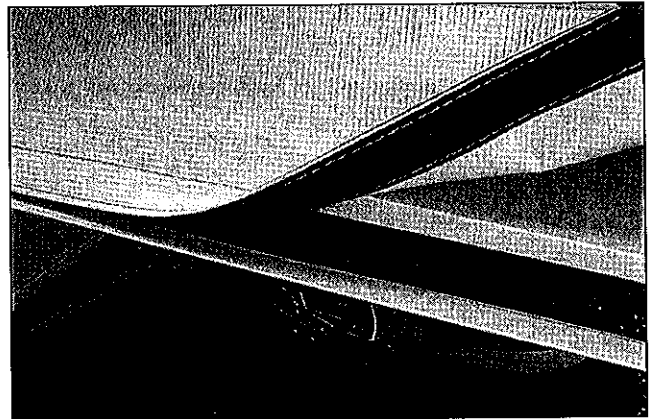
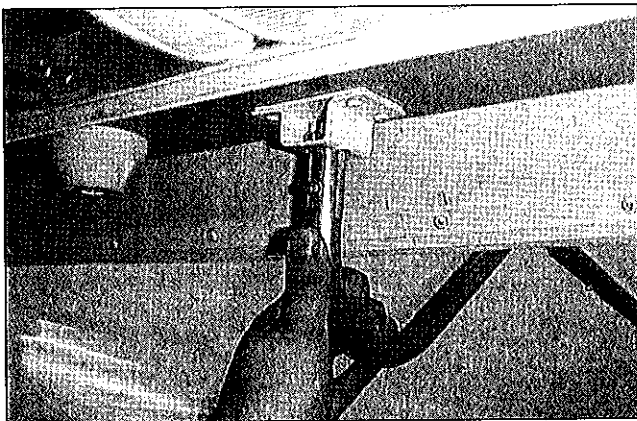


Connector at end of tension rod



Bow assembly raised with tension rod

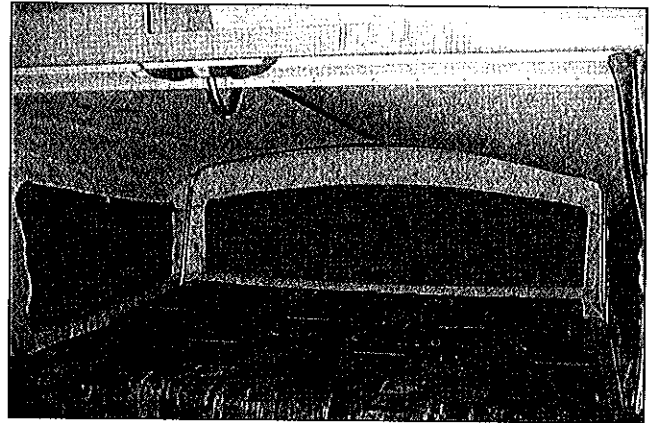
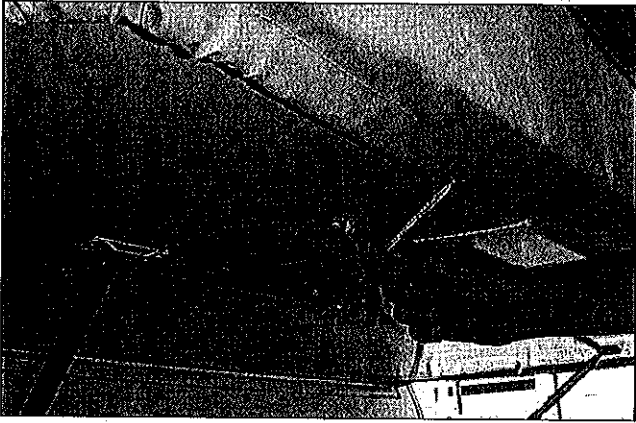
From inside the trailer, place the connector end of the adjustable tension rod (candy-cane shaped rod) into mid section of the bow assembly attached to the inside of the tent door.



Push the adjustable tension rod against the bow assembly until the bow and the tent is fully extended. Lock the tension rod by inserting it into the bracket located at the front or rear shelf.

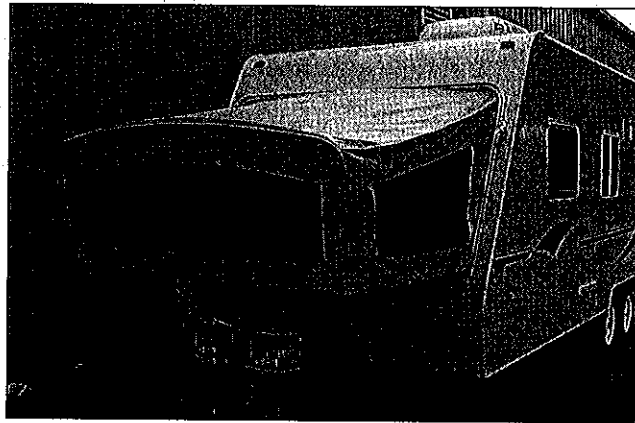
From the outside of the trailer, be sure to secure the Velcro flap attached to the tent around the perimeter edge of the door.

Ultralite Trailer Tent Set-Up Procedures



Inside view of set-up tent

After the Velcro is attached be sure all tent corners are wrapped around the tent door corners. Hook the bottom of the tent tension cord into the seven hooks attached to the tent door.



Outside view of set-up tent

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Your trailer has been designed to provide you with many years of use with a minimum amount of maintenance. This section will familiarize you with the areas of your trailer that require scheduled care. Time spent taking care of your trailer on a regular basis will pay for itself in extended service and will help protect your investment.

This section is intended to provide the owner and operator with a general overview of service and maintenance information for the trailer. Detailed service and maintenance information may be found in the owner's/operator's manuals contained in the *Owner's Information Package*.

EXTERIOR

Some exterior parts of your trailer are made of fiberglass. The finish on these parts is durable, but not indestructible. Any material and finish will deteriorate in time. Exposure to sunlight, moisture and airborne pollutants can cause dulling and fading of the finish. Generally, changes in the finish due to weathering are cosmetic - they are on the surface of the part and do not affect its strength. Weathering can take the form of chalking, fading and yellowing.

The best insurance against these effects is routine maintenance. If the finish is not washed and waxed thoroughly, the surface can deteriorate rapidly. The following maintenance guidelines can help you reduce these weathering effects:

1. When the trailer is not in use, keep the fiberglass surfaces out of the sun or covered with a canvas tarpaulin. Avoid using plastic or other nonporous materials which can trap moisture between the cover and the fiberglass surface.
2. Wash the exterior with a mild soap. Avoid strong alkaline cleaners and abrasives. For the best results, use a cleaner formulated for fiberglass, and follow the directions for using the cleaner. **DO NOT use automatic dishwasher detergent, abrasives, bleaches,**

strong chemicals with acids/bases, or ammonia.

3. Wax the exterior at least once a year - twice, if possible - with a wax formulated for fiberglass. When waxing, always read and follow the instructions and precautions on the container. Some cleaners and waxes are recommended for use on only certain types of surfaces. As with automobiles, covered storage yields best results for longevity of exterior appearance and ease of maintenance.
4. In some cases, a light rubbing compound may be required. Always follow rubbing compound with a high-quality wax. Always follow the rubbing compound manufacturer's instructions.

Stains

Stains are generally caused by two types of substances - water soluble and non-water soluble. Water soluble stains can usually be washed away with water and mild detergent. Follow the washing with wax.

Non-water soluble stains are usually oil-based. Removal of this type of stain may require the use of highly flammable or poisonous solvents. Refer this type of service to your dealer or any authorized dealer. Never use strong solvents or abrasives to clean plastic surfaces.

Exterior Graphics Care

The pressure sensitive graphics installed on the exterior surfaces of your trailer require little maintenance and should be treated similarly to a painted surface. Here are some guidelines to help you keep your exterior graphics looking like new.

1. Wash your graphics with any mild car wash soap solution. Be sure to rinse thoroughly.
2. Keep high-pressure wash nozzles at least 1½ feet from the edge of the graphics. High pressure spray may cause the edge of the graphic to lift and peel away from the wall surface.

Maintenance

3. Test any cleaning solution on a small section of the graphic before using the cleaning solution on a larger surface.
4. Do not use any aromatic solvents such as acetone, MEK, toluene, paint thinner, lacquer thinner on your graphics. Any solvent of this type may soften or smear colors.
5. Do not paint over the graphics with clear or any other type of paint.
6. Do not let gasoline or other fuels drip or stay on graphics for any length of time. If a spill occurs, wipe off and rinse with water immediately.
7. Do not apply wax over graphics, especially if the wax contains any petroleum distillates. Wax that has dried between stripes can be removed by softening it with rubbing (isopropyl) alcohol and cotton swabs. Be sure to rinse the area after cleaning.
8. Be careful when storing your trailer. The graphic materials should be protected from prolonged direct sunlight and heat.

Windows, Doors, Vents and Locks

Keep moving parts, hinges and latches adjusted and maintained. Lubricate with a light oil at least once a year. Check and tighten the screws holding the windows in place as required. Clean screens by gently wiping with a damp cloth or soft flat brush. Not all screens are removable.

Inspect the sealants around doors and windows every three months. See Sealant Renewal section.

Lubricate locksets in doors and exterior storage compartments at least annually with powdered graphite. If the trailer is located at a beach or is exposed to salt air, more frequent lubrication may be required.

Sealant Renewal

This section outlines the procedures *you must* follow to maintain the weatherproof integrity of

your trailer. Leak damage caused by failure to inspect and maintain the roof, vents, TV/satellite antenna and molding seals may affect your warranty coverage.

The adhesives and sealants used in the construction of your trailer were developed to remain waterproof under sustained effects of weather and vibration. However, even the finest materials will eventually dry out and lose their effectiveness.

Your dealer can perform the resealing inspection and work for you. Your dealer also has current information on sealants used in your trailer, and can recommend the appropriate sealants for you if you prefer to do this work yourself. Always use the recommended sealants.



NOTE

Failure to seal could cause serious damage and will affect your warranty coverage.

Door, Window, Roof Component and Molding Resealing

Inspect the sealants around windows, floors, joints and doors at least every three months. Also inspect roof vents, other roof components, moldings at front and rear caps, and perimeter molding. If any of the following defects are evident during inspection, the affected areas must be resealed.

- Sealant cracked or peeling.
- Void or missing sealant.

If you find any of the above defects:

1. Clean all areas to be resealed with an appropriate cleaner and clean rags.
2. Make sure that all areas to be resealed are absolutely dry before new sealant is applied.



NOTE

Do not seal the bottom flanges of windows and doors. Special gaps in the sealant have been intentionally left in the bottom flange to provide drainage.

INTERIOR

Fabrics

Interior appointments such as draperies, bedspreads, mattress covers, upholstery and wall pads are manufactured from high quality materials and should be dry cleaned only. Frequent vacuuming will keep them free of dust and dirt. Minor spills should be cleaned up quickly to avoid staining. The affected area should be blotted, not rubbed, to prevent the stain from working deeper into the fabric.

WARNING

Do not use lacquer thinner, nail polish remover, carbon tetrachloride, spot remover, gasoline, or naphtha for any cleaning purpose. These products may cause damage to the material being cleaned, and may be highly flammable or poisonous.

Solid Surface Top Care (If Equipped)

The counter top is constructed of a solid surface material that requires little care. Routine care involves wiping the surface with a damp cloth to remove water marks. For stains, wipe with soapy water or ammonia-based cleaners. Remove stubborn stains on the "matte/satin" finish with an abrasive cleanser.

Laminate Top Care (If Equipped)

For cleaning laminate surfaces, use mild dishwashing liquid with warm water. Use a soft cloth for both washing and drying.

Do not use abrasive cleaners, steel wool, or gritty cleaners or damage will occur to the surface.

Walls and Ceiling Panels

The paneling and the ceiling of your trailer may be any of several finishes and textures. Never use harsh detergents or abrasive cleaners on walls or ceilings. Most surfaces will clean with a soft cloth moistened with mild liquid detergent in warm water, or a clear window cleaner solu-

tion. Do not scrub the surface or use large amounts of water which could saturate the material. Simply spray or apply the solution to the spot and blot with a clean dry rag or paper towel. Aggressive scrubbing may damage the texture or pattern.

Attaching Accessories to Your Trailer

The sidewalls of your trailer may be built with a dense fiber and polymer panel or rigid wood panel used as a substrate to the exterior fiberglass or interior finish surface.

If you want to attach items to the interior walls, **YOU MUST USE RIVETS**. The rivets can be installed with a hand-operated riveting tool such as the Arrow E-Z Pull® Model RH200. This and similar tools are available in most hardware stores and home improvement centers.

When you install a component, carefully mark the hole location and drill a 3/16" hole where the rivet is to be located.

If you need rivets, contact your Fleetwood dealer.

CAUTION

Do not use any type of screw to attach items to the interior or exterior walls of your RV. If you want to attach items to the walls, you must use expanding head type rivets. Rivet quantity, length, and grip range, will vary depending on item to be attached.

Plastic/Fiberglass Shower Stall

Some cleaners attack the plastic causing it to discolor and become brittle. The following cleaners have been tested and approved when mixed with water:

- Distilled vinegar
- Mild dishwasher detergent
- Liquid deodorizing cleaner.

Maintenance

Avoid cleaners that contain any amount of abrasives, acetone or MEK (methyl ethyl ketone).

Floors and Carpeting

Vinyl flooring requires only washing and periodic waxing. Vacuum carpeting regularly, and clean it with a quality carpet cleaner. Do not use water or waxes mixed with water on the wood floor.

Wood Floor (If Equipped)

Floors are natural resting places for dust, dirt, grit, and food spills. Dirt underfoot causes abrasions. Therefore, keep the floor clean and use exterior walk off mats at the entry door, and:

- Immediately blot up spills or spots with a damp cloth.
- Periodically clean the floor with Anderson Quick Kleen. Follow the instructions on the container.

Your wood floor can be damaged by a number of things, including:

- Water - Do not wet mop the wood floor
- Oil soap or other waxes and polishes
- Ammonia cleaners
- High heel shoes

WHEELS AND TIRES

Tire Inspection

To obtain maximum tire life, inspect tires for wear and damage before the start of each trip. When the average tread depth reaches only $\frac{1}{16}$ " at two adjacent tread ribs, replace the tire. Look for abnormal wear patterns such as cupping, feathering, or rapid wear of either the inside or outside of the tread. These conditions may indicate an inflation or alignment problem. Inspect tire sidewalls frequently for oxidation, discoloration and/or signs of visible cracking. If in doubt as to the tires condition, have a professional inspect them for you. This is especially important if the tires are several years old and

have accumulated many miles. Replace the tire if you see cuts, bulges, peeling tread or other signs of damage. Remove stones and other objects stuck in the tread. **Be certain to check wheel lug nut torque** and tire pressures as outlined in the Tires section in this manual's *On the Road* chapter.



NOTE

The most common causes of tire failure are overloading and underinflation. See the **Loading and Tires** sections in the *On the Road* chapter.

Brakes

On a regular basis, have the brakes on both vehicles inspected. Be sure that necessary adjustments are made and any damage or worn parts are replaced.

Read and understand your manufacturers owner literature.

Hitch

Check the nuts, bolts, and other fasteners to ensure that the hitch remains secured to the tow vehicle and the coupler remains secured to the trailer. The connection point may require periodic lubrication to permit free movement of the coupler to the hitch ball.

Read and understand your manufacturers owner literature.

Wiring

Make sure connector-plug prongs and receptacles, lightbulb sockets, wire splices, and ground connections are clean and shielded from moisture. Lightly coat all electrical terminal connections with nonconducting (dielectric), light waterproof grease.

Clean the prongs with very fine sandpaper, being careful not to damage the contact area.

Clean the surface deposits in the connector holes. (Make sure the lights are off to prevent

blowing a fuse.) Try to clean off only the deposits and lubricate lightly with dielectric, light waterproof grease.

Tire Replacement

Replacement tires must be the same size and should equal or exceed the weight carrying capacity of the original equipment. The original equipment tires supplied on your trailer have capacities to support Gross Axle Weight Ratings (GAWRs) as stated on the Federal Certification Tag located on the front left side of your trailer. Radial and bias ply tires must never be mixed on the same axle.

Wheel Replacement

Replacement wheels must be of the same size, type, and load capacity as the original equipment. See your authorized Fleetwood dealer to obtain correct replacements.

BATTERY MAINTENANCE AND CARE

Refer to the *Battery Inspection and Care* section in this manual's *Electrical Systems* chapter.

APPLIANCE MAINTENANCE

For individual appliance care, refer to the appliance manuals in your *Owner's Information Package*.

WATER AND HOLDING TANK MAINTENANCE

Refer to this manual's *Plumbing System* chapter.

ROOF RESEALING AND CARE

For maintenance or repair purposes, you must put down at least a 48" x 48" piece of plywood at least $\frac{3}{8}$ " thick to distribute the weight.

Inspect the roof at least every six months, pay-

ing particular attention to the seams where the areas of sheetmetal, rubber and/or fiberglass are joined.

Carefully inspect the flange connections between air conditioners, vents, skylights, etc. If signs of cracking, weathering, or drying are evident, reseal as follows:

- **Remove any loose or cracked sealant being careful not to damage the roof. Use a wooden or plastic tool that will not gouge, pierce, or otherwise damage the roof.**
- **Clean all areas requiring repair with a soft brush. This is to be done dry. DO NOT WASH WITH SOAP AND WATER, OR SOLVENTS. Be sure the surface is as dust-free as possible.**
- **Check and tighten any loose fasteners. Be careful not to over-tighten, or stripping will occur.**
- **Apply the new sealant, such as a quality acrylic caulk (not silicone) in a continuous bead along the seams and flanges, being careful not to leave any voids. Apply enough sealant to flow over the heads of all fasteners.**
- **Allow at least 48 hours for the sealant to set completely (firm and tack-free when firmly pushed with the thumb) before washing or waxing the trailer.**

WARNING

Roof materials are slippery when wet.

WARNING

Do not walk on the roof of your trailer. Because of the lightweight construction material used, the roof will not support your weight.

Maintenance

RUBBER ROOF SYSTEM

The rubber roof will provide many years of protection with only routine maintenance. The roof material is constantly exposed to ultraviolet radiation from the sun, atmospheric contaminants, pollution, dust and other compounds. These materials react with each other and some compounds in the rubber roof material, and collect on the surface of the rubber. When combined with water, some of the elements may create molds and mildew. Some leaching of the plasticizer in the rubber roof material may cause a chalky-looking substance to form.

This material builds up over time. It may flake or chalk off, or become dissolved and run down the sides of the trailer. You may perceive this as deterioration of the rubber roof material itself. This is not the case. As the rubber material ages, it actually loses only $\frac{1}{1000}$ " per year. What you see flaking and chalking is really just an accumulation of debris collected on the surface of the rubber.

This accumulation of material can be reduced or eliminated with routine cleaning.

Cleaning

For normal cleaning, standard household detergents or cleansers may be used. Use a nonabrasive, common household detergent and plenty of water. A light, medium-bristle scrub brush (NOT wire brush) can be used in place of a sponge. The scrub brush is better at loosening the accumulation. Kitchen cleansers can be used to remove stubborn stains. Avoid abrasive cleansers.

Rinse the roof and sidewalls thoroughly to reduce streaking from residue.

Care

The rubber roof itself does not require annual coatings or additional sealants. Periodic washing with soap and water is all that is required.

After cleaning, a silicon-based dressing such as 303® Protectant can be applied to help keep the roof material flexible, and to help seal the surface from other contamination. In cases where excessive chalking is evident, PEMCO® 8010/4034 two-part roof coating can be applied. This will restore the roof's appearance (other than unremovable stains) and will help seal the roof surface. Follow the instructions included with 303® Protectant and/or PEMCO® roof coating.

The rubber roof material can be cut by sharp objects. Use caution when loading sharp articles on the roof. If you add accessories or new equipment on the roof, be sure the installer is qualified to work on the rubber roof material. This is required under the terms of the warranty.

Repair kits are available through your dealer. The roof requires special adhesives and material. Do not use silicone sealants.

TRAILER A-FRAMES AND BUMPERS

There is very little that can go wrong with trailer A-frames and bumpers. Periodically inspect all the hardware attached and tighten if necessary. A-frames and bumpers should be washed to prevent the buildup of road grime and dirt. Touch-up paint should be used on all scratches and paint chips to prevent rust. A coat of paste wax will help keep them clean and protected from the elements.

MAINTENANCE GUIDELINE

For your convenience, a maintenance guideline is presented. Options and accessories usually have their own owner/user manuals that often contain maintenance instructions. Consult these

manuals as required. *Modify any suggested maintenance schedule as use conditions or performance requires.*

	A	B	C	D	E	F
Inspect Safety Chains	●					
Inspect brake wiring, connector, plug and receptacle	●					
Inspect hitch components	●					
Test breakaway switch	●					
Check tire inflation pressure	●					
Inspect tires for wear and damage	●					
Check wheel lug nut torque	●					
Check exterior lamp operation	●			●		
Inspect LPG system components	●			●		
Inspect generator exhaust (if equipped)	●					
Inspect/clean battery, cables, terminals	●					
Check battery charge (In storage)	●					
Check battery electrolyte (in use)	●					
Lubricate coupler and latch	●					
Wash exterior	●					
Wax exterior					●	
Check slide-out room function and sealing (if equipped)	●					
Lubricate and adjust exterior locks, hinges, roof vents, window mechanisms, etc.					●	
Lubricate TV antenna (if equipped)				●		
Check all exterior sealants around windows, doors, sidewall seams, lamps, all exterior openings and roof components. Reseal if necessary			●			

(continued on next page)

A - Each Trip or Monthly

B - Weekly

C - Every 3 Months

D - Every 6 Months

E - Each Year

F - At Specified Mileage or Interval

Maintenance

	A	B	C	D	E	F
Inspect and clean fuel-fired appliance vents: water heater, refrigerator, furnace		●		●	●	
Inspect, test, and service safety equipment, fire extinguisher, LP Gas*, CO* and smoke* detectors/alarms, and GFI receptacles	●					
Service appliances and equipment: refrigerator, roof air conditioner, furnace, generator, etc.				●		●
Lubricate breakaway switch pin			●			
Clean breakaway switch contacts			●			
Inspect and clean water pump filter					●	
Inspect all hot, cold drain plumbing					●	
Sanitize fresh water tank					●	
Complete LP Gas pressure check and system check					!	
Check brakes for function and noise**	●					
Inspect brakes and suspension system					!	
Pack wheel bearings					!	
Check water purifier cartridge (if equipped)					●	
Clean interior (as necessary)						

*Annual battery replacement for safety detectors/alarms is recommended regardless of battery condition.

**If function is in question or noise is present, it is recommended to have the brake system checked by qualified personnel.

Items marked with ! require special equipment and/or qualified personnel.

A - Each Trip or Monthly

E - Each Year

B - Weekly

F - At Specified Mileage or Interval

C - Every 3 Months

D - Every 6 Months

STORAGE CHECKLISTS

The following checklists will help you perform the steps necessary to prepare your trailer for storage. Use the checklist that applies to the storage conditions you anticipate.

These checklists do not include every detail required, and you may want to expand them to suit your needs. Contact your dealer for additional suggestions suitable to your climate and storage conditions, particularly extremes of hot and cold.

Short-Term Storage (Less Than 60 Days)

1. Wash the trailer exterior and underside. Hose off accumulations of mud and road salts.
2. Thoroughly clean the interior of the trailer, including carpets, counter tops, lavy, tub and shower, and galley.
3. Inflate tires to maximum rated cold pressure.
4. Park the trailer as level as possible front to rear and side to side. Block wheels front and rear.
5. Check the charge in the battery. Recharge as necessary.
6. Disconnect battery cables. Clean terminals, top and sides of batteries and battery boxes. Reinstall cables, dress with a battery terminal spray.
7. Use battery disconnect switch/es, if equipped.
8. Drain black, gray and potable water tanks.
9. Winterize, if appropriate. (See *Winterization* section in this manual.)
10. Turn off water pump and water heater switches.
11. Turn off LP gas at the cylinder valve.
12. Turn off refrigerator and furnace.
13. Turn off range and oven burner valves and pilot valves (if equipped).

14. Remove all perishables from refrigerator and galley cabinets. Block refrigerator door(s) open to reduce odor buildup. An open box or tray of baking soda in the refrigerator will help absorb odors.
15. Open closet doors, drawers, and cabinets so air can circulate.
16. In warm or hot climates, slightly open (suggested - 1/4") roof vents for ventilation. In cold climates, close and cover all vents to prevent entry of snow, etc.
17. Close and lock all windows. Be sure vent fan and range hood fan switches are off.
18. Cover exterior appliance vents (water heater, furnace, range hood, refrigerator) to prevent insects from getting in. Be sure to remove all covering material before using appliances or vents.
19. Cap or close holding tank drain, city water inlet and fresh water fill spout.
20. Turn off all radios, TVs, interior and exterior lights.
21. Close curtains and/or mini-blinds, and pull shades.
22. Disconnect and store the 120-volt power cord.
23. Cover tires with cloth, plywood, or after-market tire covers.
24. Prepare generator (if equipped). Refer to generator operating manual included in your *Owner's Information Package*.

Long-Term Storage (Over 60 Days)

1. Perform all steps as required for short-term storage.
2. Operate air conditioner(s) to lubricate compressor seals.
3. Charge and remove the battery. Store in a cool, dry place, and check the charge and water level every 30 days. If the specific gravity is being checked, recharge the battery when it drops to 1.220.

Storage

✓ NOTE

If your trailer is equipped with a solar battery charger, it will trickle charge the battery. The battery disconnect switch must be ON for the solar charger to charge the battery.

4. Remove, clean and replace roof air conditioner filter(s). Cover the air conditioner shroud(s).
5. To help preserve the tires, park each tire on a piece of plywood about 12 inches square.
6. Cover the windows on the inside with foil, cardboard, paper, etc., to reduce curtain, drape, and carpet fading.
7. Remove batteries in battery-powered devices.
8. During extended periods of storage, gasoline may deteriorate due to oxidation. This can damage rubber and other materials in the fuel system. It may also clog small orifices. Commercially available gasoline fuel stabilizers should be added whenever actual or expected storage periods exceed 60 days. Follow the additive manufacturer's instructions. Operate the vehicle regularly during the storage period to mix and circulate the anti-oxidant agent throughout the fuel system.
9. Check tire inflation pressures every 30 days. Maintain maximum rated cold inflation pressure.
10. Check the sealant around all roof, floor and body seams and windows. Reseal if necessary. See *Sealant Renewal* section.
11. Lubricate all locks and hinges as described in the *Maintenance* chapter.
12. Remove high grass or weed growth if coach is parked on dirt.

WINTERIZATION

Thoughtful planning and preparation for the winter season can help eliminate equipment failures and breakdowns, and can extend the life of your trailer and its systems. Your dealer can

advise you concerning specific winterization procedures and products for your climate area or the areas through which you will be traveling. Your dealer may also provide winterization service for all appliances and systems in the trailer. The following is a check list if you prefer to perform these procedures yourself:

1. Service and winterize the generator as outlined in the generator operating manual included in your *Owner's Information Package*.
2. Winterize the LP gas system. Your LP gas dealer or service station will perform this for you.
3. Winterize all appliances as outlined in the individual operator's manuals.
4. Remove snow accumulations as often as possible.

Water System Winterizing

Read this section completely before performing winterization.

CAUTION

Draining the water system alone will not provide adequate cold weather protection. If the trailer is to be unheated during below freezing temperatures, consult your dealer for the best winterizing procedure for your climate. Your dealer can winterize your trailer for you or can supply you with one of the special antifreezes which are safe and approved for use in RV water systems. Follow the instructions furnished with the antifreeze.

⚠ WARNING

Do not use automotive or windshield washer anti-freeze in the trailer water system. These solutions may be harmful if swallowed.

1. Remove water filter cartridge, if equipped, and install the winterizing adapter.
2. Drain the fresh water tank by opening the water tank drain valve. Close valve when drained.

3. Turn water pump on (12-volt power must be on).
4. Open a cold water faucet. When the flow of water stops, turn the pump off.
5. Open water faucets, then open the drain valves on HOT and COLD water pipes. Leave these valves open.
6. Drain the water heater by opening the drain plug at the bottom of the heater and the safety valve at the top.
7. Flush the toilet. Operate toilet sprayer, if equipped.
8. Drain the shower head by opening the valve. Let all water drain out the tub spout. Leave the valve open.
9. When each faucet has been drained, close all faucets, water line drain valves and the fresh water tank drain valve, install the water heater plug and close the safety valve.
10. Drain the waste water system by following the normal procedure for draining the holding tanks. (See *Plumbing* chapter).
11. Apply silicone lubrication to the knife valve actuator rod(s).
12. Be sure ALL water from ALL plumbing fixtures has been drained.
13. Close holding tank drain valves.
14. Pour approximately five gallons of approved non-toxic antifreeze into the fresh water tank.
15. Turn the water pump master switch ON.
16. Open each water faucet, run the water pump and let about a cup of antifreeze solution flow continuously through each faucet. Close each water faucet.
17. Flush the toilet until the antifreeze solution flows continuously. Release flush mechanism.
18. Your trailer may be equipped with a water heater bypass. Winterize the hot water lines by opening each hot water faucet, allowing

antifreeze solution to flow continuously, and then close each faucet. This will require considerably more antifreeze solution, and you may choose to do this step before winterizing the cold water lines so you can recycle the solution.



NOTE

When filling the plumbing systems with antifreeze, be sure to open and operate all fixtures and valves allowing the antifreeze solution to flow freely.

19. Pour one cup of antifreeze solution down each drain.
20. Install all protective caps:
 - Water tank fill
 - City water inlet cap
 - Waste tank drain outlet cap
21. If your refrigerator is equipped with an ice maker, winterize it as follows:
 1. Shut off the water supply valve to the ice maker.
 2. Place a shallow pan under the water solenoid valve.
 3. Remove the inlet fitting to the ice maker water solenoid valve. Drain the water from the supply line.
 4. Remove the plastic nut and water line from the outlet side of the water solenoid valve. Drain water from the line.
 5. Cycle the ice maker several times while blowing compressed air through the water solenoid valve. Be sure all water is out of the solenoid. **NOTE: Your trailer dealer can do this for you.**
 6. Reconnect and tighten the lines on the solenoid valve. Leave the water supply turned off until temperatures are above 32°F/0°C.
 7. Dry out the ice maker mold assembly with a soft cloth. Place the bail arm to the **UP/OFF** position.

Storage

REACTIVATING THE TRAILER AFTER STORAGE

If the trailer was properly and carefully prepared for storage, taking it out of storage will not be difficult. The following procedure check list assumes that you stored the trailer with care. If you didn't, and extensive freeze damage or other serious deterioration has occurred, please consult your dealer or any authorized Fleetwood dealer for advice.

1. Thoroughly inspect the outside of the trailer. Look for animal nests in wheel wells or in other out of the way places.
2. Remove all appliance vents, ceiling vent and air conditioner coverings. Be sure all furnace, water heater, and refrigerator openings are clear and free of debris or insect nests, webs, etc.
3. Open all doors and compartments. Check for animal or insect intrusion, water damage, or other deterioration.
4. Check charge level in batteries. Refill and recharge as necessary. Reinstall batteries if necessary. Be sure cable ends and terminals are clean and free of corrosion.
5. Check tire pressures. Inflate to specified cold pressure.
6. Remove covering from inside windows.
7. Open vents and windows for ventilation.
8. Drain, flush, and sanitize the fresh water system as outlined in the *Plumbing* chapter.
9. Install a new water filter cartridge (if equipped).
10. Operate all faucets and fixtures in the fresh water system. Check for leaks at all joints and fittings. Repair if necessary making sure the water heater bypass is open.
11. Check operation of 12-volt circuit breakers and inspect fuses. Replace as necessary.
12. Operate all 12-volt lights and accessories.
13. Install new batteries in battery-operated devices. Check operator's manual for each device for any additional requirements.
14. Test carbon monoxide, LP gas and smoke detectors/alarms.
15. Check monitor panel operation.
16. Operate vents and vent fans, including the range hood fan.
17. Inspect the 120-volt electrical system – power cord, converter, all outlets, and any exposed wiring. If defects are found, refer service to your dealer or an authorized Fleetwood Service Center.
18. Prepare the generator for operation following instructions in the generator operating manual in your *Owner's Information Package*.
19. Start and run generator.
20. Operate 120-volt appliances and air conditioner(s). Be sure to uncover air conditioner shroud(s).
21. Inspect the LP gas system and check for leaks as described in the *LP Gas System* chapter. If the LP gas cylinder shows signs of rust or corrosion, have it inspected by a qualified LPG technician.
22. Operate each LP gas appliance. Have the LP gas regulator adjusted for proper pressure by a qualified technician.
23. Inspect and clean the interior.
24. Check the sealant around all roof, floor and body seams and windows. Reseal if necessary. See *Sealant Renewal* section.
25. Lubricate all exterior locks, hinges, and latches.
26. Wash and wax the exterior. Inspect the body for scratches or other damage. Touch up or repair as necessary. Flush the underside thoroughly.

Your trailer should now be ready for a new traveling season. If you choose, your dealer can double check your preparation and repair any problems or make any necessary adjustments.

TRAILER/TOW VEHICLE LOAD WORKSHEETS

Worksheet #1

Trailer GVWR: _____ lbs. (See tag on front roadside of trailer)

Trailer tongue load rating: _____ lbs. (See *Trailer Loading* section of this Owner's Manual)

1. Take the first scale reading with the entire trailer resting on the scale and the tow vehicle disconnected and off the scale. The trailer should be fully loaded with cargo, water and LP gas.

1st scale reading: _____ lbs. Loaded Trailer Weight

2. Take the second scale reading after moving the trailer so that only its axles are on the scale. Keep the trailer level. Do not lower the landing gear on fifth-wheels.

2nd scale reading: _____ lbs. Loaded Trailer Axle(s) Weight

3. Calculate the pin/tongue weight percentage.

1st scale reading: _____ lbs.

Minus (-) 2nd scale reading: _____ lbs.

Equals (=) Loaded pin/tongue weight: _____ lbs. Not to exceed pin/tongue weight rating)

tongue weight/1st scale reading x 100 = _____ % tongue weight

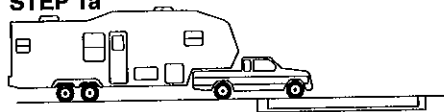
Tongue weight should be between 15% and 25% for fifth-wheel trailers and between 9% and 15% for travel trailers.

Trailer/Tow Vehicle Load Worksheets

Worksheet #2

Tow Vehicle: To Obtain Individual Axle and Gross Vehicle Weights:

STEP 1a



Scale Weight _____ lbs.
(entry 1a = GAW)

From Owner's Manual _____ lbs.
Front GAWR

STEP 1b



Scale Weight _____ lbs.
(entry 1b = GVW)

From CCC Label _____ lbs.
GVWR

STEP 1c

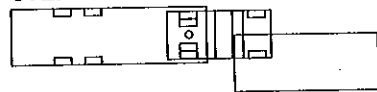
(Calculated)

_____ lbs.
Step 1c: Rear Axle = (1b - 1a)

_____ lbs.
Rear GAWR

Tow Vehicle: To Obtain Individual Wheel Position Weights:

STEP 2a

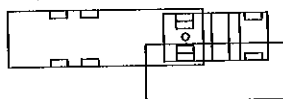


Scale Weight _____ lbs.
(entry 2a)

Calculate Other _____ lbs.
Side Weight (entry 1a - entry 2a)

Tire Load Rating _____ lbs. at inflation _____ psi (see Note #1)

STEP 2b



_____ lbs.
(entry 2b)

STEP 2c

(Calculated)

_____ lbs.
Step 2c: Right Rear = (entry 2b - entry 2a)

_____ lbs.
Step 2c: Left Rear = (1c - 2c)

Travel Trailer: To Obtain Individual Axle and Gross Vehicle Weights:

STEP 3a



Scale Weight _____ lbs.
(Entry 3a)

STEP 3b



_____ lbs.
Rear Axle = (entry 3b)

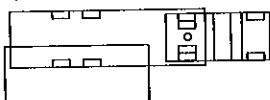
_____ lbs.
Rear GAWR

_____ lbs.
Step 3b: Calculate Front Axle = (3a - 3b) = 3c

_____ lbs.
Front GAWR

Travel Trailer: To Obtain Individual Wheel Position Weights:

STEP 4a

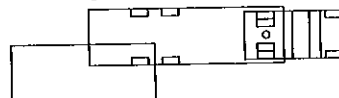


One Side _____ lbs.
Scale Weight (entry 4a)

Calculate Other _____ lbs.
Side Weight (entry 3a - entry 4a)

Tire Load Rating _____ lbs. at inflation _____ psi (see Note #1)

STEP 4b



_____ lbs.
Right Rear = (entry 4b)

_____ lbs.
Left Rear = (entry 3b - entry 4b)

_____ lbs.

Calculate Right
Front Weight = (entry 4a - entry 4b) = 4c

_____ lbs.

Calculate Left
Front Weight = (3c - 4c)

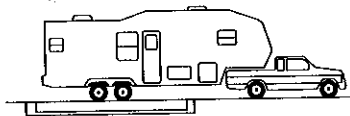
To Obtain Gross Combination Weights:

STEP 5a



_____ lbs.
(Step 1b = GVW)

STEP 5b



Scale Weight _____ lbs.
(Step 3a = GVW)

STEP 5c

c. Calculate Gross Combined
Weight = (entry 1b + entry 3a)

_____ lbs.
d. Must not exceed tow vehicle GCWR

_____ lbs.

CAUTION

Individual wheel position weights must not exceed the maximum tire load capacity. Maximum tire load capacity can only be achieved utilizing the maximum allowable psi as listed on the sidewall of the tire.

Note #1 From the tire manufacturer's load and inflation tables or the sidewall of the tires mounted on the vehicle. For more information/additional assistance, contact your tire dealer.

TRAILER WEIGHT INFORMATION

MODEL:

VIN:

GVWR:

UVW:

CCC:

GVWR (Gross Vehicle Weight Rating) is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin.

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

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

CARGO CARRYING CAPACITY (CCC) CALCULATION

	<u>pounds</u>	<u>(kilograms)</u>
GVWR	_____	_____
minus UVW	_____	_____
minus fresh water weight of _____ gallons at 8.33 lb./gal.	_____	_____
minus LP-Gas weight of _____	_____	_____
 CCC for this trailer*	 _____	 _____

*Dealer installed equipment will reduce CCC. Customers should request this information from the dealer. All weights and capacities are approximate.

This RV is equipped with waste holding tanks with total capacity of _____ gallons which will weigh _____ pounds when full. Please drain tanks before travel to prevent overloading.

CONSULT OWNER'S MANUAL(S) FOR SPECIFIC HITCHING AND WEIGHING INSTRUCTIONS, AND TOWING GUIDELINES.

To make sure that you get the maximum satisfaction out of your recreational vehicle purchase, there are several things you should know:

1. Learn all you can about the travel trailer or fifth-wheel you're planning to buy. Don't rely on word of mouth. Get the facts about the actual trailer length, width, Unloaded Vehicle Weight, Gross Vehicle Weight Rating, and Cargo Carrying Capacity. Be sure to check this information before you decide which unit to buy.
2. Verify the towing capacity of your tow vehicle. If you don't know or aren't sure, you can ask at your automotive dealership. Be sure to match its tow rating to the loaded (not dry) weight of your trailer. Include the weight of water, additional accessories, clothing, food, and gear. To help Fleetwood travel trailer customers estimate this total weight, our Gross Vehicle Weight Ratings reflect the actual maximum weight of the trailer when fully loaded for camping.

Taking these simple steps before you buy will help insure that your trailer is just what you wanted. You'll also have the peace of mind of knowing that your tow vehicle will be adequate to get you there.

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GLOSSARY

Black Water Tank - The water tank in your plumbing system that is designed to contain waste water from the toilet ONLY.

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

CAUTION - Any statement in this *Owner's Manual* that, if not followed, could result in damage to the vehicle or components.

Chassis Operator's/Owner's Guide/Manual - This is the operating and maintenance manual supplied by the chassis manufacturer. It is part of your *Owner's Information Package*.

Clearance Lights - This switch will flash the clearance lights and is useful when signalling other large vehicles when passing or being passed.

DC Converter - An electronic device that changes 120-volt AC energy from the main power connection or the generator to 12-volt DC energy to operate the 12-volt interior lights or other 12-volt DC appliances or accessories.

Doorside - The right side of the trailer from the driver's point of view. So named because the main entry/exit door is on this side.

GAWR (Gross Axle Weight Rating) - Is the maximum weight a specific axle is designed to carry.

GCWR (Gross Combined Weight Rating) - Is the value specified by the tow vehicle manufacturer as the maximum allowable loaded weight of the tow vehicle with its towed trailer or towed vehicle.

GFCI (Ground Fault Circuit Interrupter) - An electrical device attached to the bathroom AC circuits that disconnect the outlet if a problem occurs in the ground circuit.

Gray Water Tank - The water tank in your plumbing system that is designed to contain waste water from the sinks and shower drains ONLY. No toilet wastes go into this tank.

GVWR (Gross Vehicle Weight Rating) - Is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin.

Hitch Rating - Means the maximum allowable weight of a towed trailer or towed vehicle. The GCWR of the trailer must never be exceeded, even if the weight of the towed trailer or towed vehicle is less than the hitch rating.

Monitor Panel - An electronic device that allows you to conveniently measure the approximate levels in the fresh water, gray and black water tanks. You can also check the charge in the battery/batteries.

MTW (Maximum Tongue Weight) - Is the maximum permissible downward force exerted on the hitch ball by the towed vehicle coupler.

NOTE - A statement or instruction in this *Owner's Manual* with information to help you use the vehicle or equipment more efficiently, such as a tip.

Owner's Information Package - This is a package of papers, manuals, warranty and instruction cards, and other material put together for you by Fleetwood. These materials contain operating and maintenance instructions for most of the components and appliances in your trailer.

Ownercare Card - The card that has your name and trailer serial number (V.I.N.) imprinted on it. Use this card when you request or need warranty service. Please note that this is NOT a credit card. You cannot purchase anything with it. It is used only to identify you and your trailer.

Glossary

Park Cable - The F-style video connector that allows you to connect to an outside television signal source, such as the cable TV feed at an RV park, or any other 75-ohm video source. This connector usually carries an RF modulated signal.

Park/City Water Connection - The “garden-hose” style connector that allows you to connect to an outside pressurized water source.

Power/Shore Cord - This is the main power cord coming into your trailer electrical system. You connect it to 120-volt AC power at a park or campsite.

Roadside - The left side of the trailer from the driver’s point of view. So named because, at least in North America, the “road” outside the vehicle is usually on this side.

MTW (Maximum Tongue Weight) - The maximum permissible downward force exerted on the hitch ball by the towed vehicle coupler.

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

VIN (Vehicle Identification Number) - The legal, 17-digit vehicle identification number as shown on the vehicle registration certificate.

WARNING - A statement or instruction in this *Owner’s Manual* that, if not followed, could lead to personal injury or death.

