

# **WINNEBAGO<sup>®</sup>**

## **TOWABLES**



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# SECTION 1 – INTRODUCTION

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Winnebago Towables employees welcome you to our growing family of travel trailer and fifth wheel owners. Since Winnebago Towables inception, our goal has been to provide towable recreational vehicles designed and engineered to give many years of enjoyment to our customers who love the great outdoors. This manual has been compiled to assist campers, both novice and experienced in set-up, use, and preventative maintenance for continued enjoyment from their travel trailer or fifth wheel. Like finely crafted furniture or highly engineered automobiles, Winnebago Towable travel trailers and fifth wheels require care and regular maintenance to retain maximum performance characteristics. If, after taking delivery of your new trailer it requires additional adjustment, please return the trailer to your dealer as soon as possible. This Owner's Manual, along with information provided in your Owner's Information Package, outlines important areas of operation and provides maintenance schedules to ensure safe, trouble-free service. Knowledge of trailer usage, components and maintenance will help you enjoy many miles and years of recreational living.

*Note: This manual is of a general nature only. Some equipment and features described or shown in this manual may not be available in your model. Because of the Winnebago Towables continuous program of product improvement, it is possible that recent product changes and information may not be included.*

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## INITIAL DEALER RESPONSIBILITY

Winnebago Towables employees assemble travel trailers and fifth wheels to standards which meet or exceed local, state and national codes. Each trailer has been thoroughly inspected at our facilities prior to shipment. Every Winnebago Towable dealer has the responsibility to reinspect and to prepare every travel trailer and fifth wheel

during the pre-delivery phase of the sale. Dealership personnel will provide instruction in basic trailer use and features plus complete a pre-delivery inspection with you. Dealership pre-delivery instruction and inspections should be supplemented by a thorough review of all material furnished with the trailer by Winnebago Towables and component and appliance manufacturers. The dealer/customer pre-delivery instruction and inspection should review:

- TOW VEHICLE/TRAILER CONNECTIONS
- TRAILER CONNECTION MAINTENANCE
- COUPLING & UNCOUPLING
- BREAKAWAY SWITCH
- TRAILER LOADING
- EXTERIOR INSPECTION
- INTERIOR DÉCOR INSPECTION
- EMERGENCY EXITS
- FIRE EXTINGUISHER
- FRESHWATER SYSTEM OPERATION
- WATER PUMP OPERATION
- WASTEWATER SYSTEM OPERATION
- WATER HEATER OPERATION
- LAVATORY AND TUB/SHOWER CARE
- CONVERTER FUNCTION & OPERATION
- GROUND FAULT INTERRUPTER (GFI)
- CIRCUIT BREAKERS
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- REFRIGERATOR OPERATION
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- FURNACE OPERATION
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- MONITORING PANEL FUNCTIONS
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## SECTION 1 – INTRODUCTION

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- TV ANTENNA & RELATED COMPONENTS
- AWNINGS
- BED CONVERSIONS
- CURTAINS, CARPET & COUNTERTOPS
- TABLE SETUP & STORAGE
- SPARE TIRE CARRIER
- EXPLANATION OF WINNEBAGO TOWABLE WARRANTY
- EXPLANATION OF COMPONENT & APPLIANCE WARRANTIES
- ACCEPTANCE OF TRAILER CLEANLINESS
- WEIGHT DISTRIBUTION

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### GENERAL INFORMATION

The Owner's Manual will provide general information and instruction. Product information or instruction may not apply, may be excluded or may be generalized because:

- Equipment and features described or shown may be optional or unavailable on some models.
- Ongoing design changes may not be included because of continuous product improvement.
- Specifications may change without notice.

Descriptions or photographs in this manual are representative of function and may not specifically depict actual equipment, fabrics, interior or exterior décor or design options as installed with your trailer.

### **THIS PRODUCT IS DESIGNED FOR RECREATIONAL USE AND SHORT-TERM OCCUPANCY ONLY.**

**Winnebago Towable** travel trailers and fifth wheels are not designed or intended to be used as permanent housing. Using this product for long term or permanent occupancy may lead to premature deterioration of appliances, plumbing, interior finishes, fabrics, carpeting and drapes. Damage or deterioration due to long term

occupancy is not considered normal, and constitutes misuse or abuse under the warranty terms, therefore voiding your warranty protection.

### **Obtaining Service**

#### **Make an Appointment**

Always make an appointment in advance with the service center. Schedule as far in advance as possible, always confirm the appointment as the date approaches. Do not show up without an appointment for service and expect that the service center will be able to “fit you in.” Arriving without an appointment may cause additional aggravation when your request is met with “I’m sorry but our schedule is full for the next several weeks.”

#### **Preparation for an Appointment**

If you have made an appointment to have warranty service, be sure to have the correct papers with you. Take your Warranty Registration paperwork and owner's packet with you to your appointment. Not all work to be performed may be covered by the warranty. Keep a maintenance log of your trailer's service history. This can often provide a clue to the current problem.

#### **Prepare A List...**

Make a written list of your trailer's problems or the specific work you would like completed. If you've had an accident or work done that is not on your maintenance log, let the service advisor know. Please don't keep secrets.

#### **Be Reasonable With Requests...**

If you list a number of items and you must have your trailer by the end of the day, discuss the situation with the service advisor and list the items in order of priority. Please do not expect to add to the list for service beyond what you have previously scheduled when you arrive for your appointment. Even though the service center may be able to complete the additional requests, their schedule has been determined based on your original request.



### **Inspecting Repairs**

Winnebago Towable and your servicing dealer want you to be satisfied with any repair. After a repair is performed, inspect the workmanship carefully. Check your service list and go over the repairs with the service center representative. Once satisfied, sign the Winnebago Towable claim form. In the event a problem should reoccur after you have left the dealership, contact the repair center or Winnebago Towables as soon as possible so that the situation can be resolved in a timely manner.

**Winnebago Towables**  
**201 14th Street · Middlebury, IN 46540**  
**Telephone: (574) 825-5250**  
**FAX: (574) 825-5433**  
**E-mail: warrantywoi@winnebagoind.com**

### **If You Need Assistance...**

Winnebago Towables and our dealers are vitally interested in your satisfaction. We want you to be happy with our products and services. Your selling dealer is best equipped and most anxious to provide prompt resolution for any warranty issue or related matter that you may experience. Winnebago Towable dealers have the facilities, trained technicians, special tools and the latest information to assure your trailer is fixed correctly and in a timely manner. If special circumstances arise, talk to your dealer's service manager. Most matters can be resolved with this process. If for some reason you are still not satisfied, talk to the general manager or owner of the dealership. They want to know if you need assistance. If your dealership is unable to resolve the concern, you may contact Winnebago Towable Customer Service.

Any communication to Winnebago Towable Customer Service should include the following information:


- Owner's Name and Address
- Owner's Telephone Number
- Dealership Name
- Trailer Identification Number
- Trailer delivery date




## SECTION 2 – SAFETY AND PRECAUTIONS





We have provided many important safety messages in this manual. Read and follow them carefully.

 <b>CAUTION</b>
Always check to be certain that the hitch is locked properly before towing. Be sure hitch bars are adjusted for proper load equalization.

 <b>CAUTION</b>
It's also important to load personal cargo so that Gross Axle Weight Rating is never exceeded. For safety's sake, you should weigh your family camping vehicle frequently as loaded for travel. We cannot emphasize too strongly that the Gross Vehicle Weight and Axle Rating must not be exceeded. Overloading is a safety hazard.

 <b>WARNING</b>
IT IS <u>NOT</u> SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.

 <b>DANGER</b>
<b>IF YOU SMELL GAS:</b> <ol style="list-style-type: none"><li>1. Extinguish all open flames, pilot lights, lanterns and smoking materials.</li><li>2. DO NOT touch electrical switches.</li><li>3. Shut off the gas supply at the tank valve(s) or gas supply connection.</li><li>4. Open the windows and exit the unit leaving the door open.</li><li>5. Stay out of the unit until the odor clears.</li><li>6. Have the propane system checked immediately and the cause of the leak corrected before using the system again.</li></ol>

 <b>WARNING</b>
<b>INSIST</b> that propane bottle(s) are not filled beyond 80% liquid level. Overfilling bottle(s) will eliminate the "safety cushion" provided by the 20% expansion area, which in turn can result in the discharge of gas through the pressure relief valve when higher outside temperatures are encountered.



## SECTION 2 – SAFETY AND PRECAUTIONS

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### WARNING

The water heater and furnace combustion air exhaust ports may be extremely HOT during water heater and furnace operation. **DO NOT** touch these outlets or allow any material to come in contact with or cover either the air intake or exhaust ports while operating the water heater and/or furnace.

### WARNING

**DO NOT** use the breakaway switch as a parking brake. The current needed to operate the brakes will drain the battery in a short time and the brakes will release when the voltage fails.

### WARNING

**DO NOT** mix different types of tires on the same vehicle such as radial, bias and bias-belted tires except in emergencies because vehicle handling and tire life may be seriously affected and may result in loss of control or tire failure.

### WARNING

**DO NOT** replace a blown fuse with one that has a higher amperage rating. If a fuse continues to blow (or circuit breaker to pop) **DO NOT** attempt to bypass it with a piece of wire. Determine the reason for the overload and have it repaired before using the circuit again. **DO NOT** attempt wiring repairs on a “live” circuit. Turn off all appliances and disconnect the trailer from all sources of 120-volt and 12-volt electricity.

### WARNING

**DO NOT** use a cheater plug (one with the ground wire pin removed) to hook up your trailer to a 120-volt plug-in. **DO NOT** use an extension cord with a lower circuit rating to plug into an electrical hookup that is beyond the reach of your trailer’s power cable.


### WARNING


**DO NOT operate the 120-volt electrical system without a proper ground.**

### WARNING

Test the smoke detector’s operation after your camping vehicle has been in storage, before each trip and at least once per week during use.




 <b>WARNING</b>
Use only antifreeze made especially for potable water systems. Automotive antifreeze, if ingested, can cause blindness, deafness or death.

 <b>WARNING</b>
FORMALDEHYDE LEVELS IN THE INDOOR AIR CAN CAUSE TEMPORARY EYE AND RESPIRATORY IRRITATION AND MAY AGGRAVATE RESPIRATORY CONDITIONS OR ALLERGIES.

## FORMALDEHYDE INFORMATION

Some of the materials used in this recreational vehicle emit formaldehyde. Eye, nose, and throat irritation, headache, nausea, and a variety of asthma-like symptoms, including shortness of breath have been reported as a result of formaldehyde exposure. Reaction to formaldehyde exposure may vary among individuals. Elderly persons and young children, as well as anyone with a history of asthma, allergies, or lung problems may be at greater risk. Research is continuing on the possible long-term effects of exposure to formaldehyde. Inadequate ventilation may allow formaldehyde and other contaminants to accumulate in indoor air. Ventilation to dilute the indoor air may be obtained from a passive or mechanical ventilation system. Always be sure to thoroughly ventilate your recreational vehicle before and during each use. High indoor temperatures and humidity may raise formaldehyde levels. When a recreational vehicle is in areas subject to high temperatures, an air conditioning system can be used to control indoor temperature levels. If you have any questions regarding the health effects of formaldehyde, consult your doctor or local health department.

 <b>WARNING</b>
This vehicle, like other vehicles, may contain small amounts of one or more substances which are listed by the state of California for causing cancer or reproductive toxicity.

## Additional Precautions

If you believe that your **Winnebago Towables** travel trailer or fifth wheel has a defect, which could cause a crash or could cause injury or death, immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying **Winnebago Towables**.

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

To contact NHTSA, either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); or write to: NHTSA, 1200 New Jersey Ave., Washington, D.C. 20590 or go to <http://www.safercar.gov>. Information may be obtained about motor vehicle safety from the hotline.



# SECTION 3 – RECOMMENDATIONS

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## Tow Vehicle Recommendations

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### MANUFACTURER SPECIFICATIONS

*Winnebago Towables* travel trailers and fifth wheels can be towed by many types of vehicles. When selecting a tow vehicle for travel trailers and fifth wheels, complying with vehicle manufacturer specific recommendations concerning towing capabilities and restrictions is critical. Many vehicle manufacturers and dealers can provide special towing packages based on specific requirements, such as trailer size, maximum trailer load and tow vehicle demands during travel (i.e. terrain, trip lengths, etc.).

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### VEHICLE TUNE-UP

Proper vehicle maintenance is necessary including engine tune-ups and lubrication. An engine may overheat on long upgrades, which may be prevented with a larger, heavy-duty radiator and proper care.

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### BATTERY AND ALTERNATOR

During travel, the tow vehicle battery and alternator must support some of the trailer's electrical equipment including taillights, turn signals, brake lights, clearance lights and electric brakes. The battery and alternator must be in good condition and able to handle this load.

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### HITCHES

Many types and ratings of trailer hitches are available. Important factors when selecting the proper hitch are:

- Follow the tow vehicle manufacturer's and the hitch manufacturer's recommendations to ensure proper installation and size requirements.

- Keep the tow vehicle and the trailer level to maintain equal weight distribution and ensure maximum steering control.

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### ELECTRONIC BRAKE CONTROLLERS

Many types of electronic brake controllers are available. Consult your dealer to determine specific needs. Insist that any electronic brake controller be installed per the manufacturer's instructions. It may be necessary to install a resistor in the trailer's braking system. If the trailer skids or the brakes grab, a resistor in the circuit may remedy the problem. Follow the individual resistor manufacturer's instructions. Do not use more than one resistor in the circuit.

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### REARVIEW SIDE-MOUNTED MIRRORS

Rearview, side-mounted mirrors on both driver and passenger sides of the tow vehicle are a necessity. Side-mounted mirrors provide a clear view of following traffic and an unobstructed view of the trailer action. They should be properly extended offering an unobstructed view of the rear of the trailer and possible traffic hazards. A travel trailer chassis (springs, wheels, tires axles, frame and tongue) is engineered to carry certain maximum load.

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### WEIGHT DISTRIBUTION

Proper weight distribution between axles and tongue is also critical to safe towing. Factors to consider when evaluating proper weight distribution are:

- On travel trailers, tongue proportion of the **GROSS VEHICLE WEIGHT** should be approximately 10 to 15% for tandem axle trailers. Depending on the tow vehicle, 11 to 12% tongue weight is ideal. Hitch weight

## SECTION 3 – RECOMMENDATIONS

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proportion on fifth wheels is a larger percentage of the GROSS VEHICLE WEIGHT.

- Proper distribution required for towing stability, assures the trailer is not rear, front, or side heavy.
- A light tongue weight or heavy weight placed at the rear end of the trailer may cause trailer sway.

Too much weight on the tongue can overload the tow vehicle, and cause poor tow vehicle stability and handling, poor braking, poor cornering and may damage the trailer frame.

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### TRAVEL TRAILER EQUALIZER HITCHES

Travel trailer load equalizer hitches can add 33% plus or minus of hitch weight to trailer axles when the trailer and tow vehicle are level. If the tow vehicle tilts front or rear, the tension on the equalizer bars will affect the amount of weight distributed to the axles.

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### REAR BUMPER LIMITATIONS

The rear bumper of a travel trailer or fifth wheel is not intended to be a weight bearing structure. The bumper is not capable of supporting any additional weight beyond that of the tire carrier and spare tire. Besides being unable to support added weight, adding weight to the rear of the travel trailer will affect the hitch weight and the stability of the trailer while towing.



#### WARNING

The rear bumper of travel trailers and fifth wheels are not intended to be used as steps and are not designed to support more than 70 pounds.

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### WEIGHT RATINGS

The Trailer Weight Information label (located inside the inside lower bar on the screen door on almost all trailers and fifth wheels) provides weight data critical to understanding the maximum load of a travel trailer or fifth wheel.

**GROSS VEHICLE WEIGHT RATING (GVWR)** is the maximum permissible weight of the trailer. The weight of the empty trailer, plus weight added in the form of water, food, clothing, and anything else in or attached to the trailer must not exceed the GVWR. In other words, the GVWR is equal to or greater than Unloaded Vehicle Weight plus the Cargo Carrying Capacity.

The **UNLOADED VEHICLE WEIGHT (UVW)** is the weight of the travel trailer or fifth wheel as manufactured. This is the weight on the trailer axles and tongue or pin.

**CARGO CARRYING CAPACITY** is the maximum weight of personal belongings, food, fresh water, PROPANE gas tools, accessories, etc. that can be loaded.

The **GROSS AXLE WEIGHT RATING (GAWR)** represents the allowable empty vehicle's axle weight plus Cargo Carrying Capacity excluding the hitch weight. The weight is divided between each axle and each has its own GAWR. The total of axle load plus the tongue weight must not exceed the trailer GVWR. The GAWR is located on the manufacturer's Federal ID label on the left side front corner outside the trailer.

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### DETERMINING TRAILER WEIGHT

**To determine the weight of a loaded trailer:**

1. Locate public weight scale.
2. Park your trailer and disconnect it on the scale. Both wheels and jacks should be on the scale.
3. The reading will be the Gross Vehicle Weight of the trailer and should not exceed the GVWR as indicated on the manufacturer Federal ID tag.



**To determine Gross Axle Weight - Both Axles:**

1. Leave trailer connected to the tow vehicle.
2. Be certain the trailer is level.
3. Leave the tow vehicle off the scale.
4. Roll forward far enough so both trailer axles are on the scale.
5. The reading will be the Gross Axle Weight for both axles.

**To determine Gross Axle Weight - Each Axle:**

1. Leave trailer connected to the tow vehicle.
2. Be certain the trailer is level.
3. Leave the tow vehicle off the scale.
4. Roll forward far enough so only rear trailer axle (two tires) is on the scale.
5. The reading will be the Gross Axle Weight for the rear axle.
6. Subtract the total Gross Axle Weight from the rear axle weight to calculate the front axle weight.

**To determine hitch weight:**

1. Subtract the total Gross Axle Weight reading from the Gross Vehicle Weight reading. This figure is the loaded hitch weight.
2. If equalizer equipment is installed, this will affect both hitch and axle weight.

RECREATION VEHICLE TRAILER CARGO CARRYING CAPACITY  
VIN: XXXXXXXXXXXXXXXXXXXX  
THE WEIGHT OF CARGO SHOULD NEVER EXCEED  
xxx kg or xxx lbs  
CAUTION:  
A full load of water equals xxx kg or xxx lbs of cargo @ 1kg/L (8.3 lb/gal)

**Sample Trailer Weight Information Labels**

These labels should be affixed on the front roadside of most travel trailers & fifth wheels.


**IMPORTANT:**

- Determine hitch and axle weights with both vehicles level.
- Tilting the trailer forward will add front axle weight.
- Hitch weight and tension of the equalizer bars will be affected by leveling the trailer and tow vehicle.
- Have the tow vehicle level if equalizers are used. Have tire pressure up to specifications as indicated on the tire sidewall.

**Consider load weights when determining weight distribution. Proper trailer positioning and loading are important not only for ease of hauling, but for safety. Remember: 10 to 15% of a travel trailer’s weight should be on the hitch. A fifth wheel will be slightly more as a percentage.**


Heavier items should be placed over the axles. Avoid placing too much weight at the front or rear of the trailer.

Excess weight in/on the rear of the trailer can have a negative effect on the stability of both vehicles. Stability and weight can be affected if waste is in the holding tanks or water in the freshwater holding tank.

 **TIRE AND LOADING INFORMATION**  
The weight of cargo should never exceed  
745 KG or 1,643 Lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	ST225/75D15D	449KPA, 65 PSI	
REAR	ST225/75D15D	449KPA, 65 PSI	
SPARE	ST225/75D15D	449KPA, 65 PSI	

MANUFACTURED BY: WINNEBAGO OF INDIANA, LLC DATE: 2-11  
CA. I.D. #99-2291  
GVWR 4,536 KG (10000 LBS)  
GAWR ALL 2,305 KG (5000 LBS) PER AXLE WITH ST225/75D15D TIRE 15X6 RIM  
AT 449 KPA ( 65 PSI) COLD SINGLE  
THIS VEHICLE CONFORMS TO ALL APPLICABLE US FEDERAL MOTOR VEHICLE SAFETY  
STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.  
VIN: 4UBAB0R25A1C00000 TYPE: TRAILER MODEL: 303SLS

 **CAUTION**

DO NOT attach such items as motorcycles, fuel or water containers, etc. on the rear of your trailer.

## SECTION 3 – RECOMMENDATIONS

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### SECURE FOR TRAVEL

Before starting out, make certain everything is secure in the trailer.

- Check cabinets and drawers; make sure nothing can spill in cabinets or refrigerator.
- Ensure that the refrigerator latch is engaged.
- Lock windows and rock guards.
- Close roof vents.
- Secure loose chairs and other items.
- Disconnect all hoses and close all valves.
- Make sure electrical cords and adapters have been disconnected and put away.

### Hitch Connection

Using the proper hitch on the tow vehicle is critical for maximum safety when towing a travel trailer. Load leveling or load-equalizing hitches with anti-sway bars are recommended for added stability and maneuvering.

Several factors need to be considered when selecting the proper hitch including:

- Gross weight of the trailer
- Tongue weight
- A welded or bolted weight-carrying hitch on the frame or body of the tow vehicle
- A 2 5/16 inches hitch ball (lubricate the hitch ball periodically)

Consult your dealer and/or a representative of your tow vehicle manufacturer in selecting a hitch and accessories for your trailer.

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### SAFETY CHAINS

The Department of Transportation federally mandates use of safety chains on travel trailers. Safe towing recommendations include:

- Attach safety chains to the tow vehicle separate from the hitch.
- Leave only enough slack in each length of chain to permit the vehicle to turn during normal driving.
- The chains should not contact the ground or road surface.

- Cross the chains from the trailer hitch to the tow vehicle.
- When all connections are secure, be certain the 7-pin electrical connector cord and the breakaway switch lanyard cable are longer than the extended safety chains.
- Should the hitch ball become disengaged from the coupler, the safety chains will extend, the 7-pin connector should remain connected to the tow vehicle for braking and the breakaway switch should not engage.

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### VEHICLE & TRAILER HOOKUP

Connecting the tow vehicle hitch to the coupler on the travel trailer or fifth wheel is a simple procedure described by the following:

#### Travel Trailers

1. Before dropping the coupler over the hitch ball, the coupler-locking arm must be in an unlocked position.
2. The coupler should be slightly behind the ball (away from the tow vehicle) permitting the coupler to slide down over the ball positively.
3. After locking the coupler over the ball, be certain the ball is fully engaged with the coupler.
4. Attach the safety chains to the tow vehicle. Be sure to cross the chains from the trailer hitch to the tow vehicle. Be careful to leave slack in each length of chain to permit the vehicle to turn during normal driving.
5. Check the vehicle's turning capabilities.
6. Attach the connector plug on the trailer to the electrical connection on the tow vehicle. Be sure there is slack in the cord to make sharp turns.
7. The breakaway device is located on the trailer tongue. It has a steel cable fastened to it, which will reach to the frame of the tow vehicle. The steel cable (lanyard) should be attached to a secure part of the tow vehicle, separate from the hitch, such as the frame.

8. The breakaway device is connected to the trailer battery and will operate independently to apply the trailer brakes should the trailer become disconnected from the tow vehicle.
9. Apply trailer brakes only and proceed very slowly to confirm proper engagement of the hitch and brake operation.
10. Test all exterior lights on the trailer.

### **Fifth Wheels**

1. Open the hitch locking device in the truck.
2. Lower the tailgate of the truck.

*NOTE: If not required, the rear tailgate can be removed to simplify coupling and uncoupling.*

3. Back the truck to engage the kingpin in the hitch latch plate. It is important the pin box and hitch latch plate are as level as possible.
4. Latch plates will engage the kingpin automatically on some hitches, but the handle grip must be pushed to the locked position (see manufacturer's instructions for full details). On other hitches, the lever will be used to engage the kingpin (manually) and to lock it in position.
5. Visually check that the hitch is locked to the small diameter portion of the kingpin.
6. Raise the tailgate of the truck.
7. Raise the front jacks of the fifth wheel trailer.
8. Plug the electrical connector cord into the receptacle on the truck.
9. Attach the safety cable for the breakaway device to part of the truck hitch. Keep the cable in a straight line with the switch on the trailer as much as possible and allow enough slack for turns.
10. Apply trailer brakes only and proceed very slowly to confirm proper engagement of the hitch.
11. Test operation of all exterior lights on the trailer.

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### **BREAKAWAY DEVICE**

Should your trailer become completely disconnected while being towed, the breakaway device is designed to actuate the trailer brakes and bring it to a stop, preventing a runaway trailer. The switch has a pull pin linked to the tow vehicle with a steel cable; the cable pulls the pin free. This causes two contacts in the device to go together, immediately closing the circuit between the trailer battery and the trailer brakes.



**Never tow a trailer without the trailer battery being hooked up and fully charged. Attach the breakaway lanyard cable so it is longer than the safety chain. When connected to the vehicle, the pull on the pin is in a straight line with the cable. Do not hook the cable over the trailer ball.**



Break Away Device

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### **AXLES & LEAF SPRINGS**

Our travel trailers and fifth wheels axles are suspended on heavy-duty, double-eye leaf springs designed to absorb sharp jolts from the road, reduce jolts from being transmitted to the trailer and maintain tire contact with the road. Spring shackle mounts are welded to the frame of the trailers. Check the shackle bolts periodically

## SECTION 3 – RECOMMENDATIONS

for tightness. Do not reuse shackle bolts/nuts, if an axle must be removed. Self-locking nuts must be replaced if removed.

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### TIRES

All tires meet or exceed load and wear specifications for trailers. Proper inflation pressure must be maintained for safe trailer stability and maximum tire life. Load range and maximum cold inflation pressure are stamped on the sidewall. Always inflate the tires to this maximum pressure.

A tire gauge should always be part of your tool kit. Check tire pressures before starting out, when the tire is cold. Do not bleed air out of warm tires. Inflation specifications are for cold tires. Inflate the tires of the tow vehicle to the maximum cold inflation pressure stamped on the tire sidewalls. Higher rear tire pressure improves tow vehicle stability.



#### WARNING

**CHECK TIRE PRESSURES OFTEN. ALWAYS CHECK PRESSURE WHEN TIRES ARE COLD. DO NOT EXCEED MAXIMUM RECOMMENDED PRESSURE.**



#### WARNING

**KEEP TIRES PROPERLY INFLATED. TIRES MAY LOSE AIR SUDDENLY AND/OR CATCH FIRE, IF DRIVEN FOR LONG DISTANCES OR AT HIGH SPEEDS WHILE SERIOUSLY UNDERINFLATED. TIRES COULD OVERHEAT WHERE DAMAGE TO THE VEHICLE, CONTENTS AND/OR PERSONAL INJURY MAY OCCUR.**

### Spare Tire & Cover

Note that a spare tire and/or spare tire cover are not standard on all models. To help extend the life and look of your spare tire cover, cover the spare tire with a heavy-duty garbage bag before putting on the spare tire cover. This will help keep the spare tire from bleeding through the spare tire cover.

### Changing Tires

1. Turn on the tow vehicle's hazard warning flashers.
2. Set up flares or warning lights.
3. Chock the opposite tire and unhitch the trailer from the tow vehicle, or eliminate tension on equalizer bars, if applicable.
4. Place scissors-type or hydraulic jack on a block of wood directly under the frame, close to the tire you intend to change.



#### CAUTION

**When using bottle-type jacks, a metal plate or block of wood to relieve stress against the steel frame should be inserted between jack and frame. DO NOT use a bumper jack. It may damage the sidewalls or floorboard of the trailer.**

5. Raise the jack to take weight off the tire.
6. Loosen the lug nuts.
7. Raise the jack until the tire clears the ground.
8. Remove the lug nuts and old tire and put the spare on the hub.
9. Replace and tighten the nuts.
10. Lower the jack until the tire touches the ground.
11. Tighten the lug nuts to a torque of 90 to 95 ft. lbs.
12. Lower and remove the jack.
13. Hook up equalizer bars, if applicable.
14. **CHECK THE TORQUE IMMEDIATELY.**

### Tips on Wheel Torquing

Always use a quality, calibrated ratchet-style torque wrench to torque a wheel. Torque each lug nut to the specified torque.

- Allow the wheels to cool to room temperature before loosening or tightening the lug nuts.
- Tighten the lug nuts in the proper sequence. Tightening in a random pattern can cause warping.
- Properly support the tire and wheel assembly when torquing.
- Use the correct size socket otherwise damage can occur to the lug nuts.
- While tightening the lug nuts carefully rock the wheel to make sure each lug nut is centered properly.
- Always final torque all of the wheels before completely lowering the vehicle.
- DO NOT try to get the full torque at one time. Work gradually up to the final torque to avoid warping or cracking.

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

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

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

- improve vehicle handling
- help protect you and others from avoidable, breakdowns and accidents

- improve fuel economy
- increase the life of your tires

This manual presents an overview of tire safety, including information on the following topics:

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

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

### Safety First—Basic Tire Maintenance

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

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

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

- recommended tire size
- recommended tire inflation pressure
- Vehicle Capacity Weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear Gross Axle Weight Ratings (GAWR—the maximum weight the axle systems are designed to carry)

Both placards and certification labels are permanently attached to the trailer on the forward half of the left side, and are easily readable from outside the vehicle without moving any part of the vehicle.

## SECTION 3 – RECOMMENDATIONS

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### Understanding Tire Pressure and Load Limits

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

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

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

### Checking Tire Pressure

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

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

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

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not

relate to the outside temperature. Rather, a cold tire is one that has not been driven on for the last three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

### Steps for Maintaining Proper Tire Pressure

**Step 1:** Locate the recommended tire pressure on the vehicle’s tire information placard, certification label, or in the owner’s manual.

**Step 2:** Record the tire pressure of all tires.

**Step 3:** If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct tire pressure.

**Step 4:** If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These “missing” pounds of pressure are what you will need to add.

**Step 5:** At a service station, add the missing pounds of air pressure to each tire that is under-inflated.

**Step 6:** Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle’s tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer’s recommended cold inflation pressure than to drive with a significantly

underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

### Tire Size

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

### Tire Tread

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

### Tire Balance and Wheel Alignment

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

### Tire Repair

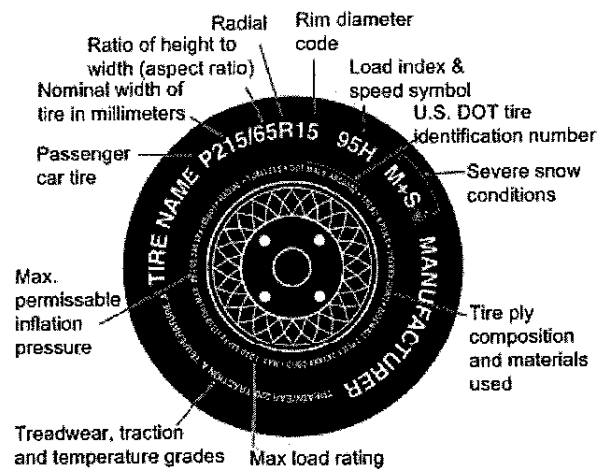
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole.

Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

### Tire Fundamentals

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

### Information on Passenger Vehicle Tires



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

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

**Next number (Positions 2, 3 and 4)** - This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

**Next number (Positions 5 and 6)** - This two-

## SECTION 3 – RECOMMENDATIONS

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

**R** - The “R” stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

**Next number (Positions 8 and 9)** - This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

**Next number (Position 10, 11 and/or 12)** - This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer.

*Note: You may not find this information on all tires because it is not required by law.*

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

**Speed Rating** - The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below.

*Note: You may not find this information on all tires because it is not required by law.*

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

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

### **U.S. DOT Tire Identification Number -**

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

### **Tire Ply Composition and Materials Used -**

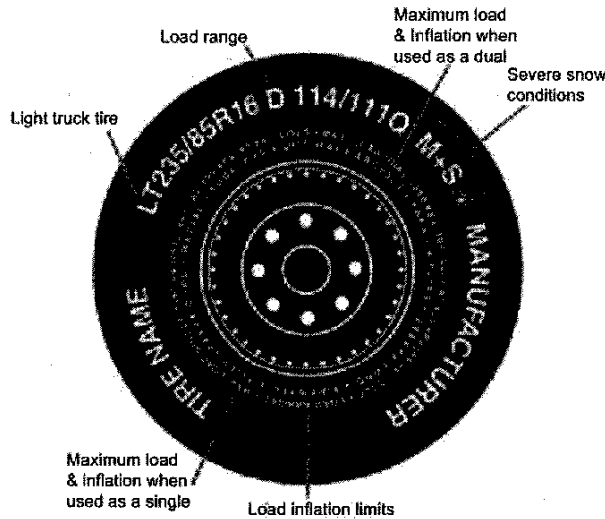
The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

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



**Maximum Permissible Inflation Pressure -**

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



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

**LT** - Indicates the tire is for light trucks or trailers.

**ST** - Indicates the tire is for trailer use only.

**Max. Load Dual kg (lbs) at kPa (psi) Cold -**

Indicates the maximum load and tire pressure when the tire is used as a dual; that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

**Max. Load Single kg (lbs) at kPa (psi) Cold -**

This information indicates the maximum load and tire pressure when the tire is used as a single.

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

**Vehicle Load Limits**

Determining the load limits of a vehicle includes more than understanding the load limits of the tires alone. A Federal certification label is located on the forward half of the roadside (left) of the unit.

The certification label will indicate the vehicle's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded vehicle can weigh. It will also provide the gross axle weight rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided. In the same location as the certification label described above, there is a vehicle placard. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity.

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

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

Distribute the cargo evenly when loading to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your RV dealer to discuss weighing methods needed to capture the various weights related to the RV. This would include weights for the following: axles, wheels, hitch or pin (in the case of a trailer) and total weight.

## SECTION 3 – RECOMMENDATIONS

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### BRAKE SYSTEM COMPONENTS

#### Tow Vehicle Battery

The primary power source for the trailer braking system is the tow vehicle battery. The connection is made at the positive post of the battery or at the tow vehicle starter solenoid battery terminal.

#### Brake Controller

Electric trailer brakes are automatically applied by the brake controller, which is usually mounted within easy reach of the driver. Connect an electric brake controller to the brakes with 12 gauge, stranded wire. Some controllers are connected to the tow vehicle's hydraulic brake system, and are actuated when tow vehicle brakes are applied. Other information about brake controllers:

- Most experienced drivers prefer the trailer brakes to be set to engage slightly before the tow vehicle brakes.
- During rainy weather or slippery road conditions, if the tow vehicle brakes first, the trailer will have a tendency to push the tow vehicle or possibly “jackknife”.
- Lag time can be adjusted by turning the brake controller knob. The new setting will be retained until a new adjustment is made.
- Brake controllers usually have a manual feature, allowing the trailer brakes to be applied independently of the tow vehicle brakes.
- Consult instructions supplied with the controller for further information.



### WARNING

**DO NOT INSTALL A FUSE IN THE CIRCUIT BETWEEN THE TOW VEHICLE BATTERY AND AN ELECTRIC OR ELECTRONIC BRAKE CONTROLLER. A BLOWN FUSE WOULD CAUSE THE CONTROLLER TO CEASE FUNCTIONING, CAUSING TRAILER BRAKING LOSS WITH NO ADVANCE WARNING. CIRCUIT PROTECTION SHOULD BE INSTALLED PER THE BRAKE CONTROLLER MANUFACTURER'S INSTRUCTIONS.**

#### Connector Plug

The 7-pin connector on the trailer hitch transfers 12-volt DC electrical power from the tow vehicle battery to the trailer brakes, exterior lighting system, and battery. After hitch connections have been made, the 7-pin connector must be longer than the extended safety chains. Extended connector life:

- Keep the plug clean, tight and protected from the elements.
- Inspect the plug carefully every time you hitch up.
- Always connect a 10 gauge, stranded, insulated copper “charge line” from the alternator on the tow vehicle to the trailer's 12-volt connector. The “charge line” will keep the trailer battery charged while traveling.
- A 30-amp circuit protector should be installed near the alternator connection.

#### Breakaway Switch

This device is a vital component of the trailer's braking system. The breakaway switch is located on the trailer tongue. The basic concept of a breakaway switch is:

1. A steel cable (lanyard) is fastened to the switch, which should connect to the frame of the tow vehicle.

2. When connected to the tow vehicle frame, the lanyard cable should be longer than the extended safety chains.
3. It automatically applies the trailer brakes if the tow vehicle and trailer become uncoupled while in motion.
4. The breakaway switch operates when a pull pin linked by a cable to the tow vehicle separates from the switch.
5. As the switch closes, the trailer battery supplies power to apply the brakes.
6. The steel lanyard must be anchored to the tow vehicle when the trailer is hitched. Secure this cable loop to the permanent frame of the tow vehicle, or a non-removable part of the hitch.
7. 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 breakaway switch operation before each trip, as follows:

1. Hitch the trailer to the tow vehicle.
2. Pull out the pull pin.
3. Test the breaker by attempting to drive away. If the breakaway switch is functioning properly, the trailer brakes will be activated.
4. If the brakes are not activated, check to make sure that the trailer battery is connected and fully charged, and the trailer brakes are properly adjusted.
5. If the trailer brakes do not operate after making these checks, contact your dealer for repair.
6. Reinsert the pull pin before towing the trailer.



**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**

Travel trailer and fifth wheel brakes are actuated by 12-volt electrical energy, converted to mechanical energy, providing power for smooth, safe, stops. Greater electrical current from the brake controller will provide greater braking force applied to the trailer brake drums.

### **Grounding**

Only proper grounding back to the tow vehicle can complete the 12-volt electrical circuit within a travel trailer or fifth wheel brake system. A poor ground circuit from the brakes to the tow vehicle battery can be as detrimental to efficient braking 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 ground in the 12-volt connector to the tow vehicle battery negative post or the tow vehicle frame. The ground conductor must be the same wire size as the “charge line”.

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## **BRAKE INSPECTION & ADJUSTMENT**

Complete the following inspections before using the travel trailer or fifth wheel:

- Inspect all external braking system components.
- Inspect all wiring connections and test the breakaway switch as outlined previously.
- Inspect the brake drums and internal components each time the wheel bearings are repacked. (See manufacturer’s Maintenance Schedule provided with your Owner’s Packet).
- The magnets and linings should not show excessive or uneven wear.

## SECTION 3 – RECOMMENDATIONS

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- The magnets should move freely on their mounts.
- After replacing the hubs on the axle, adjust the brakes as follows, using a standard automotive brake tool:
  1. Remove the rubber plug from the adjustment hole at the base of the brake drum backing plate.
  2. Raise the wheel off the ground. Place the jack under the axle only.
  3. With the adjusting tool, turn the adjusting screw while spinning the wheel. When the wheel begins to drag heavily, back off the screw just enough for the wheel to spin freely.
  4. Replace the adjustment hole plug. Lower the wheel, remove the jack and repeat the sequence for the other wheels.

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### BRAKING TIPS

#### **Never use the trailer brakes alone for extended periods.**

- They were designed to stop the trailer, not the tow vehicle.
- Such use places excessive loads on the brakes causing overheating, fading, and premature wear of magnets, brake shoe linings and drums.

#### **Never use the tow vehicle brakes alone.**

- The weight of a loaded travel trailer or fifth wheel will more than double the load placed on the vehicle's brakes.
- Driving control is adversely affected when tow vehicle brakes are used alone, due to the force of the trailer pushing against the tow vehicle. This is especially true on slippery pavement or loose gravel, and jackknifing can occur.

#### **Always use the automatic brake controller.**

- The synchronized braking system enables safe driving with both hands on the steering wheel.
- If the brake controller is properly adjusted, there will be a slight "lead" on the trailer brakes. This braking resistance, combined with the tow vehicle's engine pulling power, helps keep the two vehicles correctly aligned and help bring them to a safe, straight stop.

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### PARKING & LEVELING

Park on a wide, level spot whenever possible, never on a steep slope. Leveling is necessary for comfort and for correct operation of your refrigerator and monitor panel.

#### **Side-to-Side Leveling**

To level the trailer from side to side:

- Use a step ramp, which can be constructed from several lengths of 2x6 lumber
- Place under the wheels on the low side of the trailer.
- Use a bubble level to determine when the trailer is level.

#### **Front-to-Rear Leveling**

To level the trailer from front to rear:

- Block the wheels so that the trailer cannot roll.
- Uncouple the trailer from the tow vehicle.
- Level the trailer front to rear, with the dolly wheel jack (travel trailers) or landing gear (fifth wheel).
- Stabilizer jacks should be placed under the frame after the trailer has been leveled. Front and rear for travel trailers. Rear only for fifth wheels.
- Some models will require stabilizer jack placement in slightly different locations.
- Stabilizer jacks are not intended to support the entire weight of the trailer, but to steady it while the weight is supported by the dolly wheel jack and running gear (travel trailer) or landing gear (fifth wheel).

# SECTION 4 – APPLIANCES AND SYSTEMS

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## Operation

### SELF-CONTAINED VS. UTILITY HOOKUP

Travel trailers and fifth wheels are designed to be self-sufficient in remote campsites. Carefully watch water reserves, propane gas, battery power, holding tank capacity (and more important, tow vehicle battery power and gasoline).

The following chart shows the source of power or supply for various trailer components depending on whether you are setup for self-contained operation or at a RV park hookup.

<b>POWER SUPPLY OR SOURCE</b>		
<b>ITEM</b>	<b>SELF-CONTAINED (REMOTE) OPERATION</b>	<b>CITY HOOKUP (RV PARK)</b>
Range/Oven	LPG Tanks	LPG Tanks
Water Heater	LPG Tanks	LPG Tanks/120-volt*
Furnace	LPG Tanks	LPG Tanks
Refrigerator	LPG Tanks	120-volt Input Line
Furnace Blower	12-volt Trailer Battery	12-volt (Converter and 120-volt Input)
Motor	12-volt Trailer Battery	12-volt (Converter and 120-volt Input)
Vent Hood		12-volt (Converter and 120-volt Input)
Wall Electrical	(Not Available)	120-volt Input Line
Outlets	12-volt Trailer Battery	12-volt (Converter and 120-volt Input)
Interior Lights		120-volt Input Line
Air Conditioning (Optional)	(Not Available)	120-volt Input Line
Water Supply	Trailer Water Tank	City/Park Hookup
Water Pressure	12-volt Pump on Demand	City/Park Pressure Systems
Drainage-Kit & Lav Sinks, Tub/Shower	Gray Holding Tank	Gray Holding Tank
Drainage-Toilet	Toilet Holding Tank	Toilet Holding Tank
Trailer Battery Recharge	Tow Vehicle Alternator	Battery Charger in Power Center – 12-volt Input Line
Lights – Brake Signal, Backup	12-volt Tow Vehicle Batt.	
Lights – Running	12-volt Tow Vehicle Batt.	
Brakes	12-volt Tow Vehicle Batt.	
Breakaway		
Safety Device	12-volt Tow Vehicle Batt.	

## SECTION 4 – APPLIANCES AND SYSTEMS

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### AIR CONDITIONER (OPTIONAL)

For those units equipped with roof mounted air conditioners, they operate on 120-volt AC power. There are different sizes and variations available depending on the unit. An air conditioner takes a sizable amount of power to run. Most RV electrical systems are designed with 30 amps of available power with some having 50 amp capability (see Section 6, Electrical). It may be necessary to reduce other loads when using air conditioning to reduce the chance of overload and possibly tripping the main breaker. (For thermostat operation on the air conditioner, see “Thermostat” in this section).

In climates that experience high temperatures, a second air conditioner may be necessary to maintain a comfortable indoor temperature on larger trailers. A second air conditioner requires 50 amp service. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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### AWNING, PATIO

If equipped, Winnebago Towables use a variety of styles and sizes of awnings. They are primarily designed as a sun/rain protection. During any rain, it will be necessary to tilt one end of the awning for proper water run off and/or store the awning. Typically the end farthest away from the entry door is tilted so the door will not hit and damage the awning fabric when it is opened and closed. Awnings that experience damage from wind or rain are not considered warrantable. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

*NOTE: It is best to close the awning when unattended. Damage to the awning due to wind, rain or any weather condition is not covered under warranty by Winnebago Towables or the awning manufacturer.*

### Electric Patio

If equipped, this awning can be extended and retracted electrically. This awning may or may not have tilt functionality. Awnings without tilt functionality will need to be stored during any rain. For awnings equipped with tilt functionality, during rain, it will be necessary to tilt one end of the awning for proper water run off and/or store the awning. Please refer to the awning manufacturer's instructions supplied with the unit for care and operation.

*NOTE: An awning damaged from wind or rain is not covered under warranty even if it was tilted. The safest way is to put it away if you are unsure.*

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### CARBON MONOXIDE (CO) DETECTOR

For your safety, a carbon monoxide (CO) detector is installed in every unit. Depending on the model, it may be operated by battery (9-volt, AA) or wired so that it will be powered by a RV battery (if equipped) or 12-volt power from the converter. Please refer to the manufacturer instructions supplied with the unit for care and operation and/or [www.atwoodmobile.com](http://www.atwoodmobile.com), [www.qginc.com](http://www.qginc.com), or [www.mtiindustries.com](http://www.mtiindustries.com).

Common sources of CO are malfunctioning or misuse of gas appliances, vehicle engines, generators and many other fuel burning products.

Some indications of CO poisoning include (but not limited to) the following:

#### Mild Exposure

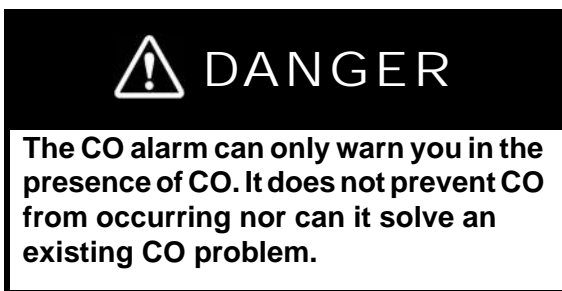
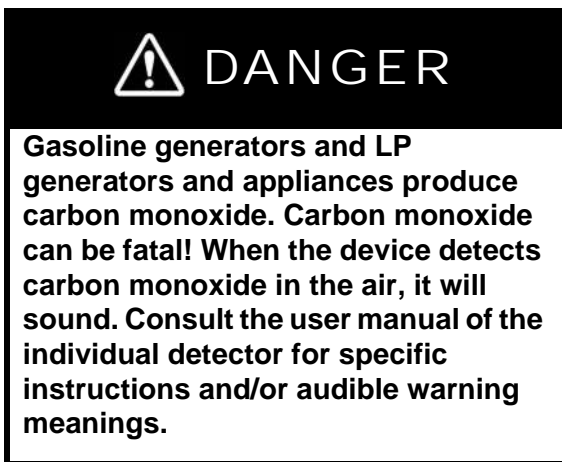
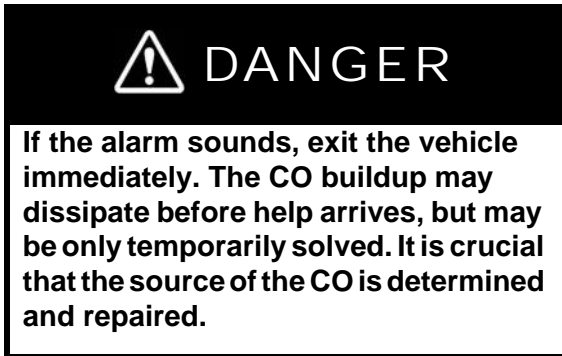
- Symptoms of the flu (minus a fever)
- Slight Headache
- Dizziness
- Fatigue

#### Medium Exposure

- Severe Throbbing Headache
- Drowsiness
- Confusion
- Fast Heart Rate

**Extreme Exposure**

- Unconsciousness
- Convulsions
- Cardiorespiratory Failure
- Death



**For your safety and to keep your carbon monoxide alarm in good working order, follow the steps below:**

- Verify the unit alarm, lights and battery operation by pushing the “Test” button weekly.

- Vacuum the CO alarm cover with a soft brush attachment once a month to remove accumulated dust.
- Instruct children never to play with the CO alarm. Warn children of the dangers of carbon monoxide poisoning.
- Never use detergents or solvents to clean the carbon monoxide alarm.
- Avoid spraying paint, hair spray, air fresheners or other aerosols near the CO detector.
- Do not paint the CO detector. Paint will seal the vents and interfere with the sensor ability to detect CO.
- Do not place near a diaper pail.
- Test the alarm operation after your coach has been in storage, before each trip and at least once a week during the camping season.
- Replace the CO detector when recommended by the manufacturer (typically every five years).

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**FURNACE**

The furnace is a propane gas appliance that requires 12-volt power to electronically light. New furnaces sometimes emit smoke and an odor during the first 5 - 10 minutes of initial use due to paint burning off the heating chamber. Do not mistake this for a malfunctioning furnace. Please refer to the manufacturer's instructions supplied with the unit for care and operation.



## SECTION 4 – APPLIANCES AND SYSTEMS

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**DANGER**

**DO NOT store gasoline or any other flammable vapors or liquids in the vicinity of any appliance.**

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### THERMOSTAT - WALL MOUNTED

If equipped, a wall mounted thermostat can be for furnace only or a combination air conditioner/furnace thermostat. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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### MICROWAVE/CONVECTION OVEN (OPTIONAL)

If equipped, microwaves operate on 120-volt power. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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### OVEN OR COOKTOP (RANGE)

If equipped, the oven and/or cooktop can be used for general baking. It requires propane gas to operate. Some models require a pilot to be lit while others light electronically using 12-volt. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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### RANGE HOOD

The range hood operates on 12-volt power and should be used to ventilate when cooking. Operational switches for the fan and/or light are on the front panel of the range hood. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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### REFRIGERATOR

The refrigerator can operate on 120-volt or on LP gas (requires 12-volt to light). The unit must be level to operate properly. The refrigerator will operate most efficiently when:

1. The unit is level.
2. It is allowed 4 hours to cool prior to putting items in it.
3. The items are already cold or frozen before putting them in the refrigerator.

Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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**DANGER**

**All pilot lights, appliances and their igniters (see operating instructions) shall be turned off before refueling of fuel tanks and/or propane containers. Failure to comply could result in death or serious injury.**

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**DANGER**

**DO NOT store gasoline or any other flammable vapors or liquids in the vicinity of any appliance.**

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### ROOF VENTS (POWER/MANUAL)

If equipped, a powered ceiling vent fan runs on 12-volt. This equipment is an excellent tool to help manage indoor air quality. Please refer to the manufacturer's instructions supplied with the unit for care and operation.

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## SECTION 5 – PROPANE GAS


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Propane gas operates your range, oven, furnace, water heater, and as an alternate energy source for some refrigerators. With proper handling precautions, propane gas is safe and provides modern conveniences. It is stored as a liquid under pressure and vaporizes under the control of a pressure regulator.

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### PROPANE GAS SAFETY PRECAUTIONS

Historically, propane gas is a safe and reliable fuel. As with any other volatile and flammable material, common sense dictates that propane gas be handled and used with respect and caution. To avoid trouble, maintain the system regularly.

 <b>WARNING</b>
<b>Propane gas is flammable and potentially explosive. Use proper handling, lighting and ventilation procedures.</b>

1. The distinctive odor of propane gas indicates a leak. **IF YOU SMELL GAS:**

- Extinguish all open flames, pilot lights and all smoking materials.
- Do not touch electrical switches.
- Shut off the gas supply at the tank valve(s) or gas supply connection.
- Open all doors, windows and vents.
- Leave the area until the odor clears.
- Have the gas system checked and the cause of the leak corrected before using the system again.


2. Inspect the entire propane gas system for leaks or damaged parts before each trip.

3. Always be careful when drilling holes or fastening objects to the trailer. The gas supply lines could be punctured by a nail or screw.
4. Do not restrict access to propane tanks. The tank service valve must be accessible in an emergency.
5. Do not carry or store filled or empty propane gas containers inside a trailer.


- Propane gas containers are equipped with a safety device that relieves excessive pressure by discharging gas to the atmosphere.
- Leaks can occur at valves and fittings.
- Always store propane tanks with the valves closed.

6. Do not use any propane gas tanks other than those furnished with the trailer without being sure that all connecting components are compatible.

7.

 <b>WARNING</b>
<b>Turn off propane gas main valve and individually turn off all gas appliances or disconnect electric automatic ignition appliances before entering a propane gas bulk plant or motor fuel service station.</b>

8.

 <b>WARNING</b>
<b>DO NOT fill propane gas containers to more than 80% capacity. Overfilling can result in uncontrolled gas flow which can cause fire or explosion. A properly filled container holds about 80% of its volume as liquid.</b>

## SECTION 5 – PROPANE GAS

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9. Never check for leaks with an open flame. Use an approved leak detection solution or a nonammoniated, nonchlorinated soap solution only. If the leak cannot be located, take the unit to a propane gas service representative.
10. Propane 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 gas pressure causing fire or explosion.
11. Do not use a wrench or pliers to close the service valve. This valve is designed to be closed, leak-tight by hand. If a tool is required to stop a leak, the valve needs repair or replacement. Contact your dealer.
12. Use a proper wrench to tighten the fitting. Don't force, jam or cross-thread the fitting. Always check this fitting for leaks after tightening.
13. Be sure the tanks are securely fastened in their rack whenever they are mounted on the trailer.
14. If you do not have the special tools and training necessary, do not attempt to repair propane gas system components.
- 15.

### WARNING

**Screened enclosures or enclosed porches attached to the side of trailers, which have appliance PROPANE gas vents, present a threat of CARBON MONOXIDE poisoning unless properly vented by opening windows or venting in the enclosure.**

16. **ALWAYS THINK SAFETY.**

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## FILLING PROPANE GAS TANKS

### WARNING

**Turn off all pilot lights and appliances individually before fueling fuel tanks and/or permanently mounted propane gas containers. When not individually turned off, automatic ignition appliances may continue to spark when propane gas is turned off at the container.**

Propane gas tanks must be removed from the trailer and taken to a propane gas supplier or a service station, which sells propane gas to be filled.

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## QCC1 COUPLER

The QCC1 coupler and hose assembly connects the propane gas tanks to the propane gas regulator.

- It has a right-hand thread.
- Turn it to the right to tighten, turn left to loosen.
- The mating surfaces are brass and do not require any type of pipe sealant.
- If it ever leaks or cannot be reasonably tightened without excessive force, replace the complete hose assembly and/or have the tank valve checked and serviced.
- The QCC1 coupler contains an excess flow control to help restrict gas flow if the hose is cut or the regulator is broken.
- It is not designed to detect a leak or totally shut off the system if a leak or regulator failure occurs.
- The excess flow control can inadvertently restrict gas flow to the appliances. To reduce or eliminate this problem, try the following whenever restricted gas flow is evident:

1. Be sure all appliances (including pilot lights, if equipped) are off and no gas is flowing in the system.
2. Be sure the system is leak free. Test the fittings as outlined later in this section.
3. Open the gas tank valve slowly. **DO NOT SNAP IT OPEN.** The sudden pressure fluctuation could confuse the excess flow control into thinking that the system was damaged.
4. Wait at least 15 seconds before lighting any pilot or appliance.

This procedure will allow the excess flow control to settle and supply a normal flow of gas.

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## PROPANE GAS REGULATOR

The regulator is the heart of the propane gas system. It works continuously and requires more care and attention than any other part of the system.



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## LIGHTING PROPANE GAS APPLIANCES

Detailed operating information for propane appliances can be found in the Owner's Information Package. Please read and follow these instructions. Air trapped in the gas lines may delay initial lighting of any appliance. Several seconds or minutes may pass 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.

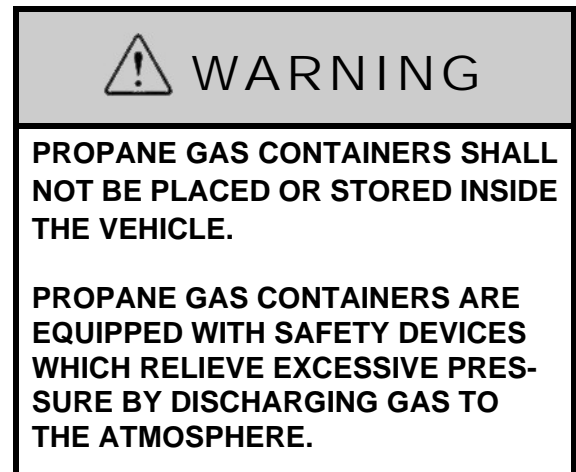
**ALWAYS FOLLOW THE APPLIANCE MANUFACTURER'S LIGHTING AND OPERATING INSTRUCTIONS.**

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## SAFETY REGULATIONS REGARDING PROPANE GAS SYSTEMS & PROPANE GAS APPLIANCES


The manufacturer of this recreational vehicle is required to furnish the following consumer information as provided by the National Fire Prevention Association and the American National Standards Institute. The information and warnings found here may also be found in other sections of this Owner's Manual.




This warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion:


## SECTION 5 – PROPANE GAS

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 <b>WARNING</b>
IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING. Cooking appliances need fresh air for safe operation. Before operation: <ol style="list-style-type: none"><li>1. Open overhead vent or turn on exhaust fan.</li><li>2. Open window.</li></ol> <b>FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.</b>


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

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

 <b>CAUTION</b>
THIS PROPANE PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY. DO NOT CONNECT NATURAL GAST TO THIS SYSTEM.  Securely cap inlet when not connected for use. After turning on propane, except after normal cylinder replacement, test propane piping and connections to appliance for leakage with soapy water or bubble solution. <b>DO NOT</b> use products that contain ammonia or chlorine.

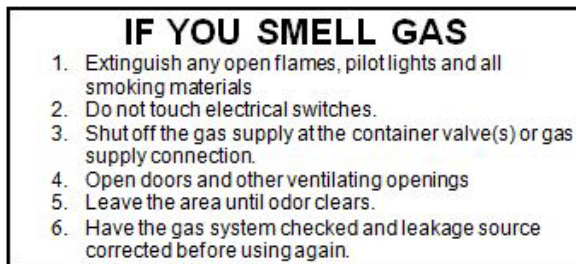
The tank manufacturer has affixed the following labels to the propane tanks and valves of this trailer:

<b>NOTICE</b>
THIS IS A NEW CYLINDER THAT SHOULD BE PURGED BY AN AUTHORIZED PROPANE FILLER BEFORE IT IS FILLED FOR THE FIRST TIME. THE FILLER WILL REMOVE THIS LABEL AFTER PURGING AND FILLING. <b>DO NOT OVERFILL.</b>

 <b>WARNING</b>
THIS CYLINDER IS EQUIPPED WITH AN OVERFILL PREVENTION DEVICE

- Only qualified persons are permitted to fill this cylinder.
- Read and understand the cylinder warning label before attempting to fill.
- The Overfill Prevention Device (OPD) will only operate if the cylinder is overfilled (greater than 80% level). Do not attempt to calibrate or tamper with the OPD.
- Before filling, inspect the cylinder in accordance with CGA C-6 or CGA C-6.3.
- Cylinder must be level, stable and vertical at all times.
- This cylinder must be filled in accordance with US DOT, NFPA-58, State and Local regulations.
- Failure to properly fill the cylinder can result in injury or death.

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



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



## SECTION 6 – ELECTRICAL

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### 12-VOLT CHASSIS ELECTRICAL SYSTEM

A trailer chassis electrical system includes:

- Trailer battery
- Charging system
- Brake system
- Taillights
- Turn signals
- 12-volt convenience outlets
- 12-volt power vents
- Fans
- Motors
- Freshwater pump
- Any 12-volt entertainment equipment
- All 12-volt interior lighting fixtures
- Other vehicle lights and accessories.

The tow vehicle's 12-volt battery, the trailer's 12-volt battery or the AC/DC power converter may provide 12-volt power. The battery's charge is maintained by the tow vehicle alternator, or by the charging circuit included in the power converter.

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### 12-VOLT FUSE BLOCK PANEL

The 12-volt fuse block panel for DC circuits is located in a cabinet in various locations by model. Fuses are automotive type and should always be replaced with the same type and amperage rating. Replace bulbs with same type or equivalent.



### 12-VOLT CIRCUIT BREAKER & RESET

In all units, 30-amp circuit breakers have been installed to protect the trailer's 12-volt electrical system.

Travel trailers circuit breakers will be located inside a covered junction box attached inside the front cross member of the A-frame. Additional circuit breakers may be used for slideout switch protection.

Fifth wheel circuit breakers will be located inside a covered fuse box attached inside the baggage compartment with additional 30-amp breakers for slideout protection and other 12-volt circuits.

*NOTE: Not all 30-amp circuit breakers are equipped with the reset switch. Resets on 30-amp circuit breakers for slideout motors are automatic reset switches.*

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### 120-VOLT AC SYSTEM

The 120-volt AC system provides grounded electrical service for the refrigerator and optional appliances such as air conditioners, microwave ovens, water heaters, TVs, etc. Other appliances such as toasters, lamps, etc. may also operate on the 120-volt system.

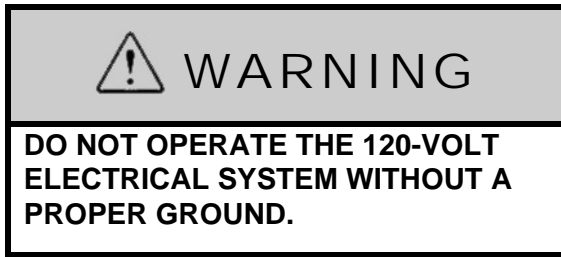
The 120-volt system also provides a power source for the power converter. The trailer is equipped with a heavy-duty power cord to connect to an external 120-volt, 30-amp rated AC service. Some units have an optional 120-volt, 50-amp service.

- The cord and connector are molded together to form a weatherproof cable assembly.
- Do not cut or alter the cable in any way.
- Do not remove the cable connector ground pin or bypass the ground circuit of the trailer.
- Be sure the ground is maintained if an adapter is used to plug into an electrical service.
- Do not use a two-conductor extension cord, or any cord or cable that does not assure appropriate and adequate ground continuity.

## SECTION 6 – ELECTRICAL

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- NEVER plug the 120-volt cord into an ungrounded receptacle.



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### THE POWER CONVERTER

The power converter is the nerve center of the 12-volt DC and the 120-volt AC system.

- The power center will supply 12-volt requirements when operating on 120 AC volts.
- The onboard battery will gradually be brought to a full charge and maintained by the 6-amp battery charger as long as 120-volt power is available.
- The propane leak detector and other 12-volt components continually consume small amounts of current even when switched “OFF”. The trailer’s battery will fully discharge within 72 hours if not recharged during that period or if the power center is not connected to a 120-volt AC source.

**DISCONNECT THE BATTERY IF YOU ARE NOT USING YOUR TRAILER.**

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### GROUND FAULT INTERRUPTER

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

1. Insulation materials for appliances and devices can deteriorate over time or develop cracks allowing electric current to “leak” through insulation.
2. Should a circuit or appliance (electric shaver, hair dryer, etc.) develop shock hazard of this type, the GFI device will disconnect the outlet (and other outlets on the same circuit), limiting exposure to current leakage to ground.
3. **The GFI device does not prevent electric shock, nor does it protect a person who touches both “hot” and neutral sides of the circuit. It does not protect against electrical circuit overloads.**

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

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.**
3. **HAVE THE TRAILER ELECTRICAL SYSTEM CHECKED AT AN AUTHORIZED SERVICE CENTER OR BY A QUALIFIED ELECTRICIAN.**
4. **DO NOT USE THE SYSTEM UNTIL THE PROBLEM HAS BEEN CORRECTED.**
5. To restore power, push the “RESET” button.



## SECTION 7 – PLUMBING

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### FRESHWATER STORAGE TANK

Water is stored in an onboard storage tank and is distributed to the various faucets by an automatic, self-priming pump which is operated by the 12-volt electrical system. This pump will function when power is available and the pump switch is “ON”.

#### Instructions to fill with a gravity fill:

This water storage tank is filled through a gravity fill (if equipped) special filler cap outside the vehicle.

1. Before filling the tank, turn the pump switch to “OFF”.
2. Open the filler cap on the outside of the trailer.
3. Pour the water in from a bucket, or use a hose.
4. When the tank is full, close the cap before turning the pump switch to “ON”.



Gravity Fill

#### Instructions to fill without a gravity fill:

1. Connect a garden hose to the city water connection located on the docking station.
2. Turn the selector valve to the tank fill location.
3. Do not turn the water pump to the ON position.
4. Turn on the water supply line and the tank will begin to fill.

5. Please do not walk away from the RV while the tank is being filled.
6. Once the tank is filled, turn the water supply OFF.
7. Turn the water valve to System Use position. At this setting your water pump will draw water from the Fresh water tank when needed.

Selector Valve



Docking Station

### CAUTION

Overfilling the freshwater tank from a pressurized source may cause serious damage to the water tank or structural components. Monitor water tank filling continuously.

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### CITY WATER

Water, under pressure, is provided when the trailer is connected to a park or city water supply. Connect the trailer as follows:

1. Turn the 12-volt water pump to “OFF”.
2. Remove the protective cap on the city water fill and connect a hose between the city water supply and the city water fill on the trailer.

## SECTION 7 – PLUMBING

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3. An in-line 60 psi pressure regulator is recommended to protect the trailer's water system.
4. Open the city water supply valve.
5. Open the faucets in the trailer and let the water run a few minutes to clear the lines.

*NOTE: As long as the water system is hooked up to a city water supply, the onboard storage tank and the 12-volt pump are isolated from the system. Do not turn the pump to "ON" until the city water supply is disconnected in order to avoid damage to the pump.*

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### FRESHWATER SYSTEM SANITIZING

Sanitize the freshwater tank and piping at least once a year or whenever the trailer sits for a prolonged period. This will discourage the growth of bacteria and other organisms that can contaminate the water supply. Use a chlorine/freshwater rinse as follows:

1. Prepare a solution of ¼ cup liquid chlorine bleach (5% sodium hypochlorite) to one gallon of water for each 15 gallons of tank capacity.
2. Close drain valves and faucets, pour chlorine solutions into the freshwater gravity tank fill (if equipped), and complete filling with fresh 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 off. This will purge any air from the lines.
4. Fill water tank with fresh water and wait three hours.
5. Drain the entire system by opening all freshwater tank valves, faucets, and plumbing line drain valves.
6. Flush the system with drinking quality water. Let the fresh water flow through the system for several minutes to flush out the chlorine solution.
7. Stop the flow of water, close the tank valve, the faucets, and drain valves.

8. Fill with fresh water and the system is ready to use.



### WARNING

**DO NOT use a contaminated system until it has been cleaned and thoroughly flushed (4-6 flushes) with water. Keep children away from unit until the water is safe to drink.**



### CAUTION

**DO NOT run the water pump without water in the system. Always keep the pump switch "OFF" when the system is empty or when connected to city water. Running the water pump dry can damage it and void the warranty.**

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### DRAINING THE WATER SYSTEM

If the trailer is to be stored in temperatures below freezing, the freshwater system and the wastewater system should be drained as follows:

1. Empty the freshwater storage tank by opening the drain valve located on the tank.
2. Turn the pump to "ON" and open cold water faucets.
3. Open the drain petcocks on the hot and cold water pipes located in various locations depending on the model.
4. Open the drain valve on the bottom of the water heater (7/8" wrench required) as well as the water heater safety valve.
5. Open all the faucets and depress the flush pedal on the toilet to promote drainage.
6. Drain the holding tanks using the outlined procedures in the following section.



Hot and Cold Drain Petcocks

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## FRESHWATER SYSTEM WINTERIZING

Winterizing the freshwater system in temperatures below freezing will provide a measure of protection for system plumbing components. **After draining the freshwater system using the procedures listed above, complete the winterizing with the following steps:**

### Systems Without Water Heater Bypass

1. Pour antifreeze approved for RV freshwater systems in the gravity fill to freshwater holding tank. Depending on the capacity of the water heater in the trailer, the amount of antifreeze used should be 7-12 gallons.
2. Turn the water pump to “ON” and pump fluid through the entire freshwater system.
3. Low point petcock drains may be opened briefly to ensure that the entire system contains antifreeze.
4. Open all faucets and remove drain stops.
5. **Be certain to complete the freshwater sanitizing procedures before using the freshwater system for cooking, drinking, etc.**

### Systems With Water Heater Bypass

1. Close the hot and cold water valves entering and exiting the hot water heater.
2. Open the crossover valve connecting the cold and hot waterlines.

3. Close the valve between the freshwater tank and the water pump.
4. Open the valve on the other side of the water pump connected to a siphon hose.
5. Insert the siphon hose into the container of RV freshwater approved antifreeze.
6. Turn the pump to “ON” and pump fluid through entire freshwater system lines. This procedure will bypass the hot water heater conserving antifreeze.
7. Turn on faucets in kitchen and bath.
8. Keep pump running until antifreeze flows from faucets and turn water pump “OFF”.
9. Leave all faucets open and remove drain stops.
10. Close the valve at the siphon hose.
11. Be certain to complete freshwater sanitizing steps before using the freshwater system.



Water Heater Bypass Valves



## WARNING

**Automotive or windshield washer type antifreeze can be fatal if swallowed. DO NOT use them in the freshwater system to protect the drains in your trailer from freezing.**

## SECTION 7 – PLUMBING

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### HOLDING TANKS & DRAINAGE SYSTEM

Travel trailers and fifth wheels are equipped with two or three separate holding tanks to accommodate waste. One holding tank accommodates toilet drainage. The tub/shower and sinks have a separate drainage system. Both systems terminate at the waste valves outside the trailer.

### TOILET & TOILET HOLDING TANK

Proper toilet instruction and maintenance is explained in the manufacturer's manual supplied with the toilet.

- The toilet operation is designed to minimize the use of water needed to flush it.
- It is advisable to instruct children and strangers of proper toilet use because of the unusual operation of this type of toilet.

Before using the toilet's holding tank, prime the tank with five (5) gallons of water to discourage waste solids from settling directly under the flush valve. Add a holding tank chemical (available from your local RV supplier). Follow instructions on the package. If required, an antifreeze solution can be added at this time. It will not harm the plastic holding tank material.

The holding tanks will more effectively drain solids when the tank is relatively full of fluids. When the toilet's holding tank is ready to be emptied, locate a proper disposal station to prepare for drainage.

1. To empty or dump the toilet holding tank, remove the cap at the 3" drain connection.
2. Securely attach a 3" hose adapter and hose.
3. Connect the hose to a sewer connection at the disposal station and pull the toilet holding tank drain valve handle out in a straight line.
4. After draining, close the valve handle, rinse the tank with several gallons of water and drain again.

*NOTE: After draining the holding tank, a false reading may sometimes occur on your monitor panel due to debris or tissue hanging on the sensor probes in the tank. Most debris clinging to the monitor probes will dislodge during travel by maintaining holding tank fluid levels of at least 1/3 capacity.*

### GRAYWATER HOLDING TANK

The sinks and tub/shower wastewater will drain to a separate holding tank. This holding tank will be referred to as the graywater holding tank.

- Drain unheated, graywater holding tank(s) after the toilet holding tank. This will help flush the drainpipe and valve. Simply pull the 1½" pipe valve handle labeled "WASTE" to empty the gray tank(s).
- Continuous draining for the galley, tub and sinks is possible without draining the toilet holding tank. **NEVER leave the drain valve open continuously on the toilet holding tank. Instead, use it as on self-contained operation and then drain it periodically as required.**
- Add all necessary chemicals after draining the tank.
- The tank must contain fluid to operate and drain properly.
- Dumping stations are found at most RV campgrounds, RV parks and some automobile service stations. Lists of these stations can be obtained through sources such as recreational/camping publications.
- Whenever possible, dump the holding tanks before traveling. Wastewater and sewage in the holding tanks reduce the carrying capacity of the trailer.
- Dump holding tanks only when they are at least ¾ full. If necessary, fill the tanks with water to ¾ full. This provides sufficient water to ensure complete flushing of waste material into the sewer line.

 CAUTION

**DO NOT use any chemical additive that is not approved for recreational vehicle use. Consult your dealer for any clarification.**

 WARNING

**Holding tanks are enclosed sewer systems and must be drained into an approved dump station. All holding tanks must be drained and thoroughly rinsed regularly to prevent accumulation of harmful toxic material.**

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## HOLDING TANK DOS & DON'TS

- DO clean holding tanks with an approved cleaner.
- DO add a special chemical additive to sanitize and improve tank action.
- DO guard the tank against freeze up.
- DO keep the dump valves closed to allow the tanks to fill to facilitate drainage.
- DO keep dump valves closed and drain caps in place to allow use of the system while traveling.
- DO use any soft, single-ply toilet tissue.
- DO open the bathroom vent to dispel condensation.
- DON'T put facial tissues, paper, automotive type antifreeze, sanitary napkins, household toilet cleaners, or any other foreign objects in your holding tank which may clog or damage the system.



## SECTION 8 – ENTERTAINMENT

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### ANTENNA (TV)

The two (2) primary components are the antenna and the booster. The booster will be typically located near one of the TV locations and has a switch to turn it on and off. The booster is designed to amplify the TV (air) signal. The antenna is designed to capture the best signal available by moving it to the optimal position. If your unit is equipped with “Cable”, the booster must be off for the “Cable” signal to reach your desired TV locations.

Before raising the TV antenna, be sure the area is clear of any electrical wires or other obstructions. Also, be sure to properly stow the antenna before moving the unit. Please refer to the manufacturer's instructions supplied with the unit for care and operation.



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### SATELLITE

If equipped, please refer to the manufacturer's instructions supplied with the unit for care and operation. When selecting your campsite, make sure you have a clear line of site (no obstruction from trees, etc.) to the southwest so you can obtain the satellite signal.

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### TELEVISIONS

If equipped, please refer to the manufacturer's instructions included in the unit for care and operation. The typical operation temperature range for a LCD TV is 41 deg F (5 deg C) to 104 deg F (40 deg C). Please refer to the manufacturer's instructions supplied with the unit for care and operation.





## SECTION 9 – FURNITURE AND SOFTGOODS

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### BLINDS AND PLEATED SHADES

#### **Operating Instructions:**

Shades should be opened or closed by pushing the bottom rail up or pulling down with the knobs provided. For a duplex (day/night) shade or free-floating shade, move only one rail at a time. Shades should remain up when not in use to aid pleat retention. If tension adjustments become necessary, simply wind cords around center of the bobbin fastener to tighten or retie to loosen. Any adjustments should be made equally on both cords for shade to remain level. Rubbing cords with paraffin wax (or candle) will help lengthen the life of the cords by reducing friction and fraying.

#### **Cleaning Instructions:**

Dry brush or vacuum only. Pleated shades should not get wet. Use a damp cloth with mild soap to remove small stains.

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### DRAPERIES/BEDSPREADS

Draperies and upholstery fabrics are treated with fire-retardants and are dry-clean only unless the manufacturer label indicates otherwise. When dry cleaning, be sure to inform attendant of fire retardant items. Spots and stains should be removed with a non-water based commercial spot remover manufactured for this purpose. Washing a dry-clean only bedspread could cause premature deterioration, fading, shrinkage and/or possible damage.

**DO NOT ATTEMPT TO DRY OR FLUFF BEDSPREADS OR DRAPERIES IN A DRYER. THE BACKING MATERIAL WILL MELT WHEN EXPOSED TO CONTINUAL HEAT.**

Professional cleaning will preserve the finishes and appearance of these products.

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### FABRIC AND UPHOLSTERY

Do not laundry upholstery fabrics. Blot up stains promptly and use an upholstery cleaner or mild solvent, depending on the stain. Never soak the fabric and use as little water as possible. Blot rather than rub. Towel dry or have professionally cleaned. Upholstery can be vacuumed regularly using a soft brush attachment.

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### CARPETING

The carpeting installed is made of nylon and is easy to maintain. Vacuum regularly to remove abrasive grit. Water-based spills and spots should be removed immediately with a damp cloth. Grease or oil-based stains and spots should be spot cleaned with a good commercial spot cleaner made for this purpose. If complete shampooing is desired, it is best to have it done by a competent professional carpet cleaner. Never soak or waterlog your carpeting.

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### FABRIC COLOR FADING

The minimum light fastness for home furnishings is 40 hours of direct sunlight. In addition, drapery fabrics are affected by gas fading; the upholstery wallboards and carpeting emit a gas and in extreme heat can cause fading. Sun fading/gas fading is not a warranty item. When storing vehicle, it is suggested to avoid direct sun and keep ventilated to avoid heat build up.



# SECTION 10 – SLIDEOUT ROOMS AND LEVELING

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## SLIDEOUT ROOM


Winnebago Towable trailer slideout rooms operate using an “On/Off” switch for power and a toggle switch, which controls the movement of the room in and out.

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## OPENING THE SLIDEOUT

1. Level the trailer and put stabilizer jacks down.
2. Allow sufficient space for room movement.
3. Check for obstructions on the roof and at the ends of the slideout room (i.e., open cabinet doors).
4. Press and hold the lower rocker switch to open.
5. As the room reaches the wall, stop pressing the switch.
6. Check the perimeter seal behind the wood trim. If the perimeter seal is not in contact with the room, very briefly press the rocker switch to further open the room until the seal makes contact.

 <b>CAUTION</b>
<b>Continuing to press the slideout room rocker switch will cause the top of the room to run past the perimeter seal. Damage to the wood trim around the slideout room and damage to the interior walls may occur if the room is run out beyond the perimeter seal.</b>

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## CLOSING SLIDEOUTS

1. Clear the roof of any debris (i.e., leaves, branches, etc.).
2. Check for obstructions inside (i.e., open doors/drawers, rugs, furniture, etc.).

3. Press and hold the upper rocker switch to close the room. Block stops have been placed on the gear rails to stop the slideout room at the proper closed position.
4. As the gear mechanism begin straining to close further, remove pressure from the rocker switch and inspect the outside bulb seal. The outside bulb seal will be compressed to half its open thickness when closed properly.

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## SLIDEOUT ROOM MAINTENANCE

- Keep the battery at full charge. A low battery will affect slideout room operation.
- At least twice a year, open the slideout room and inspect the drive rams. Remove any dirt and grime accumulations. Apply a light coating of white lithium grease to the drive rams if needed.
- Check all bolts attaching the rams to the bottom of the slideout room.
- Spray rubber seals with silicone to maintain flexibility.


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## MANUAL OPENING/CLOSING SLIDEOUTS

### Main Sliderooms

Access to the manual drive shaft for flush floor and nonflush floor slides is located on opposite side of slideroom between skirt metal and main rail of frame. To operate manual drive shaft, a 3/4” socket is required.

 <b>CAUTION</b>
<b>Before manually operating slide, be sure power switch is turned off.</b>

## SECTION 10 – SLIDEOUT ROOMS AND LEVELING

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Manual Override, Requires a 3/4 inch wrench

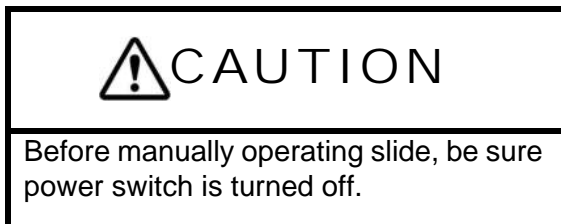


Retaining Screw

### Bedroom Slides Equipped with Happijac Slide Mechanism

Access to manual drive for bedroom slide is located at foot end of bed opposite of motor. Requires a 1/2" socket to operate.

2. Removing the motor retaining screw will allow the override spring to disengage the motor from the gear box. At this point, the slideroom can be manually pulled back into its retracted position.



### Schwintek In Wall Slide Systems Manual Override:

**Tools Needed:** Philips Screwdriver

**This procedure will override the following issues:**

- Electrical failure of the motor
  - Seized motor
  - Seized gear box
  - Broken motor shaft
  - Stripped motor shaft
  - Broken gearbox shaft
  - Stripped gearbox shaft
  - Broken gear or pulley
1. Locate motor retaining screws located at the top of each slide column. This screw will be visible either under the optional screw cover or screwed directly through the wiper seal as shown.

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### TRAVELING

1. Make certain the slideout room is properly closed.
2. Leave the power supply switch on. This powers an electric brake within the slideout motor and prevents the bottom of the room from creeping outward.
3. A travel lock bar is also recommended to be used when transporting the RV in the event of a power loss to the electric brake.

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### LEVELING PROCEDURES

1. Choose a site that is as level as possible (some sites are equipped with a prepared surface such as concrete or asphalt). Ensure the ground is not soft and will support the weight of jacks and/or other support devices.
2. Before uncoupling, level the unit from side-to-side with suitable lengths of 2" x 6" wood blocks under the tires. Place the wood blocks on the ground forward of the wheels and tow the unit onto the blocks. Use wheel chocks to be sure the unit cannot roll.
3. Use a small level in the refrigerator, on a counter top or floor of the trailer to make sure it is level.

**NOTICE: DO NOT overextend or retract the A-frame or landing jacks as that could cause damage which would not be warrantable.**

4. Lower the A-frame jack (travel trailers) or landing jacks (fifth wheel) onto wood blocks (or other).
5. Once the unit is level, put wheel chocks or blocks in place so the unit can't move, uncouple the unit from the tow vehicle.
6. If equipped, lower the stabilizing jacks onto blocks until they firmly engage. Be sure all four jacks have about the same pressure on them as to not put the unit in a twist. Doing so can cause slideouts, doors, etc. to bind and/or operate intermittently. **DO NOT** attempt to lift the unit with the stabilizer jacks. These are not designed to bear weight, only help stabilize the unit from movement.
7. Before resuming travel, be sure the stabilizer jacks are fully retracted.

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## STABILIZING JACKS

Dependent upon the type (travel trailer/fifth wheel), product and model purchased, the stabilizer jacks included will vary. Although stabilizer jacks come in different types and sizes, all perform the same function: To stabilize the front and rear of all recreational vehicles while parked for camping. **DO NOT** attempt to lift the unit with the stabilizer jacks. These are not designed to bear weight, only help stabilize the unit from movement. Please refer to the manufacturer's instructions supplied with the unit for care and operation.



# SECTION 11 – MAINTENANCE AND STORAGE

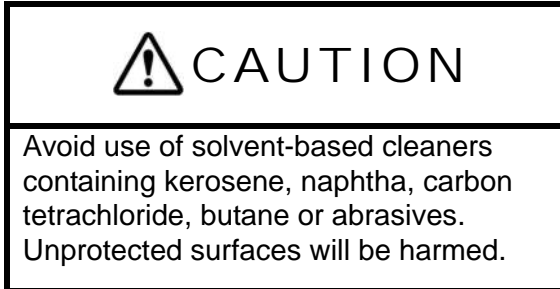
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## INTERIOR CARE

1. **Interior wood paneling.** All paneling is prefinished plywood, laminated with a film. It may be cleaned with a furniture polish.



2. **Drapes, bedspreads, upholstery and carpets.** All fabrics have been carefully selected to provide a pleasing, stylish interior. Most dirt can be easily removed with a damp cloth. If badly soiled, use good quality upholstery cleaner. For drapery and bedspread cleaning, refer to the “General Cleaning Instructions” found in this section. When storing the trailer, protect upholstery and interior from fading by putting aluminum foil between windows and drapes.
3. **Work Surfaces.** The work surfaces are plastic laminate and will resist alcohol, fruit stains, scratches, acid, household alkali and heat up to 275 degrees Fahrenheit. Waxing helps preserve the luster. Never use these surfaces for cutting or slicing, and protect them from hot vessels.
4. **Bathroom.** The bathroom fixtures should only be cleaned with a mild solution of soap and water. Never use scouring pads or powder.
5. **Appliances.** Manufacturer’s instructions for cleaning (if provided) are enclosed in the Owner’s Information Package.
6. **Floors.** Vinyl floors require only washing and periodic waxing. Vacuum carpeting regularly, and clean it with a quality carpet cleaner.

7. **Decorative Glass.** Decorative glass should be cleaned with a mild glass cleaner. The decorative material is a polymer, and will be damaged by solvents, abrasives, or strong detergents. Never use these substances to clean the decorative glass. Dampen a clean, soft cloth with glass cleaner. Avoid spraying the glass directly with the cleaner solution. Wipe the surface dry with a second clean cloth. Do not leave the cleaner on the glass surface for more than five minutes.

The frosted effect will disappear temporarily when wet, and will reappear when dry.

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## EXTERIOR CARE

Most exterior parts are made of ABS, fiberglass, aluminum and rubber materials. 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 chemically alter the composition of the base and finish materials and 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 several forms:

- **Chalking.** The surface finish has broken down into a fine powder. It usually will wash off.
- **Fading.** The color of the finish has changed. This can be caused by chemicals spilled on the surface, staining it, or by changes in the pigments used in the finish.
- **Yellowing.** Usually caused by chemical changes in the material and pigments.

The best insurance against these effects is routine maintenance. If the finish is not washed thoroughly and waxed, the surface can

## SECTION 11 – MAINTENANCE AND STORAGE

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deteriorate very rapidly. The following maintenance guidelines can help you reduce these effects:

1. Wash the exterior of the trailer at least monthly. Wash with a mild soap. Avoid strong alkaline cleaners and abrasives.
2. Wax the exterior at least once or preferably twice a year. Aluminum surfaces can be waxed with a good automotive wax.
  - 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.
3. Occasionally, one part may weather more rapidly than a similar part. In those cases, a light rubbing compound may be required. Always follow rubbing compound with a high quality wax.

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### RUBBER ROOF

Rubber roofs are installed on **Winnebago Towables** trailers and fifth wheels. Periodic cleaning is the primary maintenance required for rubber roof surfaces. The recommended maintenance includes:

- At least semiannually, inspect the roof surface for damage, breaks in caulks or sealant and seals around fasteners and accessories.
- Wash the surface with granulated household cleaner mixed in a solution with water.
- Using a soft-bristled brush will work more effectively than sponges or cloth.
- Stubborn stains caused by oak leaves or pinesap can usually be removed with a kitchen cleanser containing bleach.
- Always completely rinse soap residue from both the roof and sidewall surfaces to prevent streaks.
- Rubber roofs may become slippery when wet.

- Do not use acetone or any products containing petroleum distillates on the surface.
- Rubber roof material can be punctured or cut by sharp objects. Exercise caution when placing articles on a rubber roof surface.
- This rubber roof material does not require coatings to protect the surface from ultraviolet light or ozone.
- Protective coatings may damage the rubber roof membrane.

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### WINDOWS, DOORS, VENTS AND LOCKS

- Keep moving parts of windows and latches adjusted and maintained.
- Lubricate the windows with a light oil or powdered graphite at least once a year.
- Check and tighten the screws holding the windows in place periodically.
- Check the weather sealant.
- Clean screens by gently wiping with a damp cloth or soft flat brush.
- Inspect the seals around doors and windows every three months.
- Lubricate locksets, latches and hinges in entry 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, frequent lubrication may be required.
- Record and safely store the identification number of the keys. The lock manufacturer will need this information for duplicate keys in case of loss.

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### DOOR & WINDOW RESEALING

**Inspect the sealant around windows and doors at least every three months.** If any of the following defects are evident during inspection, the affected areas must be resealed:\*

- Excessive amount of sealant protruding from joints.
- Sealant cracked or peeling.



- Voids in sealant.

\*Consult your dealer for type of sealant.

*NOTE: Do not seal the bottom flanges of windows and doors. Two sealant voids have been intentionally left in the bottom flange sealant to provide exterior drainage in case of leakage.*

If you find any of the above defects:

1. Use a plastic scraper to remove excess sealant.
2. Clean all areas to be resealed with mineral spirits and clean rags.



Make sure that all areas to be resealed are dry before new sealant is applied.

# SECTION 11 – MAINTENANCE AND STORAGE

## MAINTENANCE CHART

SERVICE TO BE PERFORMED	SERVICE INTERVAL				
	EACH Trip Or Weekly	1,000 Miles Or Monthly	2,500 Miles Or 3 Months	5,000 Miles Or 6 Months	10,000 Miles Or Yearly
Pack Wheel Bearings					X
Inspect Brakes					X
Inspect Safety Chains	X				
Inspect Brake Wiring	X				
Inspect Tires	X				
Inspect Hitch Components	X				
Lubricate Locks					X
Lubricate Coupler Latch and Socket		X			
Lubricate Hinges					X
Inspect and Clean Vents					X
Torque Lug Nuts*		X			
Sanitize Water Tank (if trailer has been stored)			X		
Clean Drapes and Interior Fabrics					X
Clean Battery Cables and Terminals, Check Fluid Levels			X		
Inspect Suspension					X
Check All Top Sealed Seams (including Baggage Doors, Slideout Windows, Patio Lights, Vents, Awning Rails, Gutter Rails, Corner Moldings, Roof Extrusions and Rack/Ladder Brackets). Reseal as Needed**				X	
Check Water System Components					X
Balance Tires (After 1 <sup>st</sup> 1,000 Miles; as Required Thereafter)		X			
Complete LPG System Check and Pressure Check					X
Visually Inspect Exposed LPG System Components	X				
Visually Inspect Slideout Room Tubes				X	

\*From the factory, lug nuts should be tightened every 50 miles for the first 200 miles to between 90 to 95 ft.-lbs.

\*\*Leaks or water damage resulting from failure to perform normal maintenance may void the warranty.

## GENERAL CLEANING INSTRUCTIONS

Keeping a clean, well-maintained trailer will result in many years of camping fun. Following the recommended cleaning procedures will eliminate many of the problems associated with poorly maintained units. A poorly maintained unit can result in the voiding of the warranty, as will negligence, misuse or the installation of equipment not authorized by Winnebago Towables. Become familiar with the information in this manual and in the appliance manufacturer's instruction.

<b>ITEM</b>	<b>MAINTENANCE</b>
Countertops	Clean with damp, soapy cloth and dry immediately.
Refrigerator	Clean and remove food after each trip.
Stove and Sinks	Clean with appropriate cleaners.
Cushions	Use foam type cleaners or warm, soapy water.
Vinyl	Use vinyl cleaner or soapy water.
Living Room Drapes	Dry clean only.
Bedroom Curtains	Hand wash with mild detergent and drip dry. <b>DO NOT DRY IN DRYER.</b>
Bedspread	Dry clean only. <b>DO NOT DRY IN DRYER.</b>
Carpet	Use recommended carpet cleaner, vacuum.
Vinyl Floor Covering	Wash with soapy water, rinse and wax.
Prefinished Paneling	Use furniture wax or polish.
Stained Wood	Sand and restain if needed.
Propane Gas System	Check for crimped tubing or other damage. Test for leaks with soapy water or leak tester. Paint LP bottle when needed. Have pressure regulator checked regularly.
Water System	Check all hoses, fittings and connections for leaks. Clean tank discharge filter and sanitize system when necessary.
Electrical	Examine all wiring and connections.
Fire Extinguisher	Check pressure regularly and note on inspection tag.
Side Metal	Clean with soapy water and wax with a nonabrasive wax.
Air Conditioner	Clear evaporator and condenser coils, filter and pan. Cover outside when not in use.

## SECTION 11 – MAINTENANCE AND STORAGE

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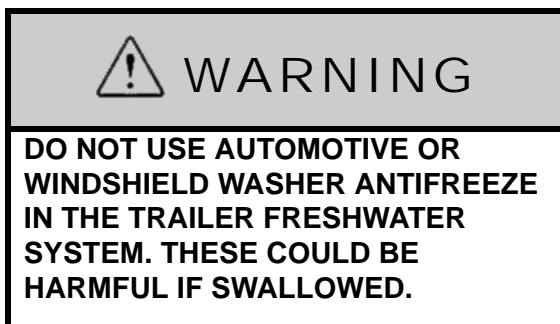
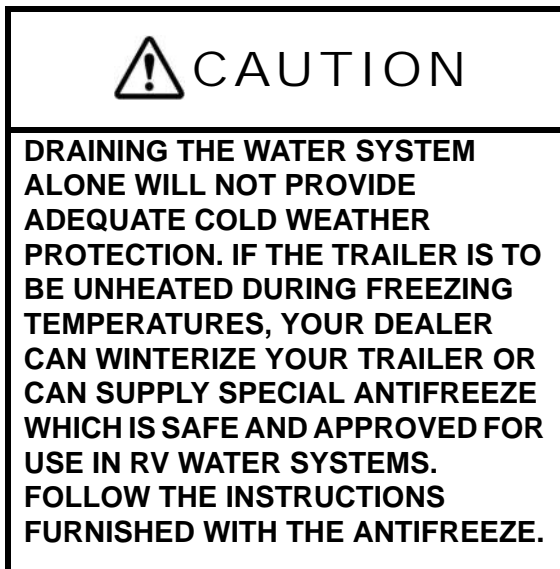
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### STORAGE

#### Cold Weather Storage

The freshwater system and holding tanks are greatly affected by cold weather. Proper winterizing will protect pipes, tanks and other components from freezing and/or cracking. The following procedures are recommended for storage during cold weather:

1. Follow the Freshwater System Draining and Winterizing Procedures in Section 7 – Plumbing.



2. Flush toilet several times to insure that water does not remain in the lines.
3. Drain waste system by opening all knife valves on holding tank system.
4. Remove and store battery(s) in an area with a similar climate to room temperature to help preserve the charge.

5. Do not allow snow to accumulate on the roof. In addition to possible damage from the excess weight, freezing and thawing of snow or ice may cause leakage through the roof seams along the top edge of the sidewalls.

#### Extended Storage

In addition to “COLD WEATHER STORAGE” procedures listed, the following procedures are recommended when a trailer will be stored for extended periods:

1. Remove all food and materials from the refrigerator and leave the door open.
2. Close all windows, vents and doors. It is a good idea to cover the windows to protect the interior from sun damage.
3. Lift the weight of the trailer off the tires using blocks or other safe devices of this type.
4. Cover tires to protect from weather damage.
5. Check the sealant on the roof, windows, doors and vents to verify proper protection.
6. Make sure the valves are closed at the LPG tanks.
7. If convenient during the storage period, periodically circulate air throughout the trailer and inspect the interior.
8. Lock all doors.
9. If the trailer is covered with plastic or canvas, provide ventilation from a vent, door and/or window to prevent mildew, etc. on the interior.

## SECTION 12 – MISCELLANEOUS

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### EFFECTS OF PROLONGED OCCUPANCY

Your trailer was designed primarily for recreational use and short-term occupancy. If you expect to occupy it for an extended period, be prepared to deal with condensation and humid conditions that may be encountered.

#### Humidity and Condensation

Moisture condensing on the inside of windows is a visible indication that there is too much humidity inside the coach. Excessive moisture can cause water stains or mildew, which can damage interior items such as upholstery and cabinets.

When you recognize the signs of excessive moisture and condensation, you should take immediate action to minimize their effects.

You can help reduce excessive moisture inside the trailer by taking the following steps:

- **Ventilate with outside air:** Partially open one or more windows and a roof vent to circulate outside air through the coach. In cold weather, this ventilation may increase use of the furnace, but it will greatly reduce the condensation.
- **Minimize moisture released inside the trailer:** Run the range hood fan while cooking and open a bath vent while bathing or showering to carry water vapor out of the coach. Avoid making steam from boiling water excessively or letting hot water run. Avoid bringing in extra moisture by way of soaked clothing or snow on shoes. Do not hang-dry wet overcoats or clothing inside to dry.

### MOLD, MOISTURE, AND YOUR TRAILER

#### What is Mold?

Molds are part of the natural environment. They are as old as the Earth itself and mold spores are almost everywhere at some level waiting to grow. Mold plays a part of nature by breaking down dead organic matter, such as fallen leaves and dead trees. Indoors however, mold growth should be avoided. Molds reproduce by means of tiny spores. Those spores are invisible to the naked eye and float throughout the outdoor and indoor air. Because of the nature of the use of a trailer, it is natural for a trailer to be introduced into an environment with mold spores.

Mold is a plant and requires its own special environment to grow. That environment includes organic materials, nutrients, moisture, and proper temperature.

#### How Can I Avoid Mold?

To reduce the ability for mold to grow, you must reduce what constitutes its growth environment. Mold can grow with the smallest of a nutrient base. Just small amounts of dirt or dust on the carpet can be enough to allow the mold process to begin. Keep the environment as clean as possible. Vacuum the carpet. Clear food spills thoroughly and quickly. Avoid grease buildup near the stove or sink. Clean the exhaust fan above the stove often.

Minimize moisture in your trailer and keep humidity low. Clean spills quickly. Do not allow condensation to build up. You can open windows and vents to minimize condensation. Use of the air conditioner can assist in removing moisture from the air. Avoid leaks, but if leaks do occur, make repairs promptly.

Avoid bringing mold into your trailer. Plants, cloths, books, and other household items may already have mold present. It is easy to transfer mold into your trailer environment.

## **SECTION 12 – MISCELLANEOUS**

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Monitor your trailer. Periodically check those hidden areas in corners, closets, and cabinets to assure mold is not present.

### **What if I Find Mold?**

If mold develops, clean the area with a concentrate of soap and bleach. Items that contain mold that cannot be cleaned should be removed from the vehicle.

### **Can Mold Harm Me?**

The effects of mold and airborne mold spores may cause irritation to some people. Experts disagree on the level of exposure that may cause health concerns.

### **If Mold is Present, What Will Winnebago Do?**

If Winnebago determines that mold is present in the Winnebago trailer as a result of a manufacturing defect reported to Winnebago within the limited warranty period, Winnebago will clean the affected area(s) and/or replace affected items as it deems necessary. This is the extent of coverage provided by Winnebago. Winnebago however, will not assume responsibility for mold deemed to be a result of a trailer users lack of timely and appropriate action to mitigate circumstances should a problem occur.

If Winnebago determines that mold is present due to conditions it determines is not a result of a manufacturing defect found within the warranty period, Winnebago will not provide any financial assistance to the repair of the condition.

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