



# LAKOTA

 OWNER'S GUIDE 

RIDE WITH A NEW GENERATION OF HORSE TRAILER



# Lakota Trailers

## HORSE TRAILERS

### **^ WARNING**

This User's Manual contains safety information and instructions for your trailer.

You must read this manual before loading or towing your trailer.

You must follow all safety precautions and instructions.

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# 1 INTRODUCTION AND WARRANTY

## 1.1 INTRODUCTION

Thank you for purchasing a trailer from Lakota Trailers. Your trailer has been carefully designed to meet your specific needs.

This manual covers the basic trailer. Read this manual before using your trailer and follow all of the safety instructions. This manual does not cover operation of the living quarters (if equipped). Therefore, you must read, understand and follow the instructions given in the living quarter manual, as well as by the trailer manufacturer, tow vehicle and trailer hitch manufacturers, and the instructions in this manual. Keep all manuals provided with your trailer in a safe place inside your trailer at all times.

Our trailers are built with components produced by various manufacturers. Some of these items have separate instruction manuals. Where this manual indicates you should read another manual, and you do not have that manual, call Lakota Trailers at 574-848-1636 for assistance.

The living quarter's conversion, if so equipped, of the trailer has added weight to the trailer. This will affect the general driving, accelerating, stopping, cornering and overall handling characteristics of the trailer.

## 1.2 WARRANTY

Lakota Corporation, hereinafter "Lakota", warrants its products to be free from defects in materials and workmanship from date of purchase by the Original Purchaser, "Original Purchase Date". See the warranty statement for your trailer model. Such warranty extends only to the original Purchaser (the first person, firm, or entity to purchase the trailer from Lakota or a Lakota authorized dealer) upon satisfactory compliance with the following conditions:

### CUSTOMER ACCEPTANCE / WARRANTY CARD

This form will need to be filled out and sent to Lakota's warranty and service department within 30 days of purchase. This will activate the warranty and will insure proper handling of claims and or service request

1. The warranty extended hereby covers only the "Frame Assembly" i.e. the side rails, side and roof extrusions, floor cross members, and subframe assemblies. Components such as doors, gates, dividers and such other material as are attached directly to the Frame Assembly shall be limited in warranty to one (1) year from the date of Original Purchase.
2. Components not manufactured by Lakota are covered only by the warranties extended by the manufacturers

of such components, and not by Lakota. Such non-warranted components include but are not limited to: tires, wheels, coupler, jacks, hub caps, axles, suspension components, hubs, drums, brakes, and all parts associated therewith. Requests for warranty adjustments on these items shall be made directly to their manufacturers, whose names and addresses will be furnished by Lakota to purchaser upon request.

3. No warranty is extended for damage caused by operator error in failing to torque tighten all lug nuts, check tire condition, breaking abilities and all other conditions normally associated with normal trailer operation. Additionally, operator error in failing to properly attach the trailer to the towing vehicle as prescribed by federal regulations and hitch specifications shall void any warranty otherwise made herein.
4. No warranty is extended for normal wear items, including but not limited to brakes, light bulbs, tires, brake linings, hoses and sealants.
5. This warranty shall not apply to any damage due to loading in excess of the Gross Vehicle Weight Rating displayed on the trailer. Use of the trailer for any purpose not intended shall constitute misuse and shall void this warranty.
6. This warranty shall be automatically void if any modification to the trailer is made without prior written authorization for such from Lakota.
7. Only a Lakota authorized dealer who has received prior written authorization from Lakota for such specific service or repair, or one of Lakota's factory locations, shall be authorized to service or correct any defect in material or workmanship found in any trailer covered by this warranty.
8. Prior written authorization from Lakota for any specific repairs and/or adjustments shall be received before any reimbursements shall be made.
9. This warranty does not cover any economic loss including without limitation; payment for the loss of time or income, inconvenience, loss of trailer use, trailer rental expense, lodging bills, meals, other travel costs, storage charges and other incidental or consequential loss or damage of whatsoever nature.
10. Lakota and its' authorized dealers reserve the right to make design changes in trailers built and/or sold by them at any time without incurring any obligation to make the same or similar changes to trailers previously built and/or sold by them.



## Introduction and Warranty

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11. This warranty shall apply, and service and/or repairs shall be made only upon prior written approval by Lakota. Lakota, at its option, prior to approval for service and/or repairs pursuant to this warranty, may require delivery of the damaged part, freight pre-paid, to Lakota's factory location, 4 Stoutco Dr / PO Box 219, Bristol, IN 46507, providing the damaged trailer for inspection by Lakota's authorized representative at Lakota's factory location or at a location selected by Lakota or by providing color photographs of the damaged trailer or to or from any alternative location Lakota may designate as a location for service and/or repair of the damaged trailer.

THIS WARRANTY IS EXPRESSLY MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS AND MERCHANTABILITY FOR A PARTICULAR PURPOSE; AND IS LIMITED IN DURATION TO THE TERM SPECIFIED HEREIN, AND NO PERSON, FIRM, OR ENTITY IS AUTHORIZED TO MAKE ANY FURTHER OR ADDITIONAL WARRANTIES ON BEHALF OF LAKOTA CORPORATION.

## 2 GENERAL SAFETY INFORMATION

### 2.1 SAFETY ALERT SYMBOLS AND SIGNAL WORDS

An Owner's Manual that provides general trailer information cannot cover all of the specific details necessary for the proper combination of every trailer, tow vehicle and hitch. Therefore, you must read, understand and follow the instructions given by the tow vehicle and trailer hitch manufacturers, as well as the instructions in this manual.

Our trailers are built with components produced by various manufacturers. Some of these items have separate instruction manuals. Where this manual indicates you should read another manual, and you do not have that manual, call Lakota Trailers at 574-848-1636 for assistance.

The safety information in this manual is denoted by the safety alert symbol: ^

The level of risk is indicated by the following signal words.

#### **^ DANGER**

**DANGER** – Immediate hazards which **WILL** result in severe personal injury or death if the warning is ignored.

#### **^ WARNING**

**WARNING** – Hazards or unsafe practices which **COULD** result in severe personal injury or death if the warning is ignored.

#### **^ CAUTION**

**CAUTION** – Hazards or unsafe practices which could result in minor or moderate injury if the warning is ignored.

#### **NOTICE**

**NOTICE** – Practices that could result in damage to the trailer or other property.

### 2.2 MAJOR HAZARDS

Loss of control of the trailer or trailer/tow vehicle combination can result in death or serious injury. The most common causes for loss of control of the trailer are:

- Improper sizing the trailer for the tow vehicle, or vice versa.
- Excessive Speed: Driving too fast for the conditions.
- Failure to adjust driving behavior when towing a trailer.
- Overloading and/or improper weight distribution.
- Improper or mis-coupling of the trailer to the hitch.
- Improper braking and steering under sway conditions.
- Not maintaining proper tire pressure.
- Not keeping lug nuts tight.

#### 2.2.1 IMPROPER SIZING OF THE TRAILER TO THE TOW VEHICLE.

Trailers that weigh too much for the towing vehicle can cause stability problems, which can lead to death or serious injury. Furthermore, the additional strain put on the engine and drive-train may lead to serious tow vehicle maintenance problems. For these reasons the maximum towing capacity of your towing vehicle should not be exceeded. The towing capacity of your tow vehicle, in terms of maximum Gross Trailer Weight (GTW) and maximum Gross Combined Weight Rating (GCWR) can be found in the tow vehicles Owner's Manual.

#### **^ DANGER**

**Use of an under-rated hitch, ball or tow vehicle can result in loss of control leading to death or serious injury.**

**Make certain your hitch and tow vehicle are rated for your trailer.**

#### 2.2.2 DRIVING TOO FAST

With ideal road conditions, the maximum recommended speed for safely towing a trailer is 60 mph. If you drive too fast, the trailer is more likely to sway, thus increasing the possibility for loss of control. Also your tires may overheat, thus increasing the possibility of a blowout.

#### **^ WARNING**

**Driving too fast for conditions can result in loss of control and cause death or serious injury.**

**Adjust speed down when towing trailer.**

#### 2.2.3 FAILURE TO ADJUST DRIVING BEHAVIOR WHEN TOWING A TRAILER

When towing a trailer, you will have decreased acceleration, increased stopping distance, and increased turning radius (which means you must make wider turns to keep from hitting curbs, vehicles, and anything else that is on the

## General Safety Information

inside corner). Furthermore the trailer will change the handling characteristics of your towing vehicle, making it more sensitive to steering inputs and more likely to be pushed around in windy conditions or when being passed by large vehicles. In addition, you will need a longer distance to pass, due to slower acceleration and increased length. With this in mind:

- Be alert for slippery conditions. You are more likely to be affected by slippery road surfaces when driving a tow vehicle with a trailer, than driving a tow vehicle without a trailer.
- Anticipate the trailer “swaying.” Swaying can be caused by excessive steering, wind gusts, roadway edges, or by the trailer reaction to the pressure wave created by passing trucks and buses.
- When encountering trailer sway, take your foot off the accelerator, and steer as little as possible in order to stay on the road. Use small “trim-like” steering adjustments. Do not attempt to steer out of the sway; you’ll only make it worse. Also do not apply the tow vehicle brakes to correct trailer swaying. On the other hand, application of the trailer brakes alone will tend to straighten out the combination, especially when going downhill.
- Check rearview mirrors frequently to observe the trailer and traffic.
- Use lower gear when driving down steep or long grades. Use the engine and transmission as a brake. Do not ride the brakes, as they can overheat and become ineffective.
- Be aware of your trailer height, especially when approaching bridges, roofed areas and around trees.

### **2.2.4 TRAILER NOT PROPERLY COUPLED TO THE HITCH**

It is critical the trailer be securely coupled to the hitch, and the safety chains and emergency breakaway brake lanyard are correctly attached. Uncoupling may result in death or serious injury to you and to others.

### **^ WARNING**

**Proper selection and condition of the coupler and hitch are essential to safely towing your trailer. A loss of coupling may result in death or serious injury.**

- **Be sure the hitch load rating is equal to or greater than the load rating of the coupler.**
- **Be sure the hitch size matches the coupler size.**
- **Observe the hitch for wear, corrosion and cracks before coupling. Replace worn, corroded or cracked hitch components before coupling the trailer to the tow vehicle.**
- **Be sure the hitch components are tight before coupling the trailer to the tow vehicle.**

### **^ WARNING**

**An improperly coupled trailer can result in death or serious injury.**

**Do not move the trailer until:**

- **The coupler is secured and locked to hitch;**
- **The safety chains are secured to the tow vehicle; and**
- **The trailer jack(s) are fully retracted.**

**Do not tow the trailer on the road until:**

- **Tires and wheels are checked;**
- **The trailer brakes are checked;**
- **The breakaway switch is connected to the tow vehicle;**
- **The load is secured to the trailer; and**
- **The trailer lights are connected and checked.**

### **2.2.5 PROPER USE OF SAFETY CHAINS**

If your trailer comes loose from the hitch for any reason, we have provided safety chains so control of the trailer can still be maintained.

## General Safety Information

### **^ WARNING**

Improper rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury, if the trailer uncouples from the tow vehicle.

- Fasten chains to frame of tow vehicle. Do not fasten chains to any part of the hitch unless the hitch has holes or loops specifically for that purpose.
- Cross chains underneath hitch and coupler with enough slack to permit turning and to hold tongue up, if the trailer comes loose.

#### **2.2.6 PROPER CONNECTION OF BREAKAWAY BRAKE**

If equipped with brakes, your trailer will be equipped with a breakaway brake system that can apply the brakes on your trailer if your trailer comes loose from the hitch for any reason. You will have a separate set of instructions for the breakaway brake if your trailer is so equipped. The breakaway brake system, including battery, must be in good condition and properly rigged to be effective. Also be sure to allow enough slack in the break-away brake lanyard such that the switch will only activate (pin pulls out) if the coupler connection comes loose.

### **^ WARNING**

**An ineffective or inoperative breakaway brake system can result in a runaway trailer, leading to death or serious injury if the coupler or hitch fails.**

**The breakaway lanyard must be connected to the tow vehicle, and NOT to any part of the hitch.**

**Before towing the trailer, test the function of the breakaway brake system. If the breakaway brake system is not working, do not tow the trailer. Have it serviced or repaired.**

#### **2.2.7 MATCHING TRAILER AND HITCH**

### **^ DANGER**

**Use of a hitch with a load rating less than the load rating of the trailer can result in loss of control and may lead to death or serious injury.**

**Use of a tow vehicle with a towing capacity less than the load rating of the trailer can result in loss of control, and may lead to death or serious injury.**

**Be sure your hitch and tow vehicle are rated for the Gross Vehicle Weight Rating (GVWR) of your trailer.**

#### **2.2.8 WORN TIRES, LOOSE WHEELS AND LUG NUTS**

Just as with your tow vehicle, the trailer tires and wheels are important safety items. Therefore, it is essential to inspect the trailer tires before each tow.

If a tire has a bald spot, bulge, cut, cracks, or is showing any cords, replace the tire before towing. If a tire has uneven tread wear, take the trailer to a dealer service center for diagnosis. Uneven tread wear can be caused by tire imbalance, axle misalignment or incorrect inflation.

Tires with too little tread will not provide adequate frictional forces on wet roadways and can result in loss of control, leading to death or serious injury.

Improper tire pressure causes increased tire wear and may reduce trailer stability, which can result in a tire blowout or possible loss of control. Therefore, before each tow you must also check the tire pressure. Remember, the proper tire pressure is listed on the Certification / VIN label, normally mounted on the front left side of the trailer, and should be checked when tires are cold. Allow 3 hours cool-down after driving as much as 1 mile at 40 mph before checking tire pressure.

### **^ WARNING**

**Improper tire pressure may cause an unstable trailer. Blowout and loss of control may occur. Death or serious injury can result.**

**Make sure of proper tire pressure before towing trailer. Inflate tires to pressure stated on the Certification / VIN label.**

The tightness of the lug nuts is very important in keeping the wheels properly seated to the hub. Before each tow, check to make sure they are tight.

## General Safety Information

### **^ WARNING**

**Metal creep between the wheel rim and lug nuts (bolts) will cause rim to loosen.**

**Death or injury can occur if wheel comes off.**

**Tighten lug nuts (bolts) before each tow.**

The proper tightness (torque) for lug nuts is listed in Section 9.2.1 in the "Inspection, Service and Maintenance" section of this manual. Use a torque wrench to tighten the lug nuts, use the crisscross star pattern.

Lug nuts are also prone to loosen after first being assembled. When driving a new trailer (or after wheels have been remounted), check to make sure they are tight after the **first** 10, 25 and 50 miles of driving and before each tow thereafter.

Failure to perform this check can result in a wheel separating from the trailer and a crash, leading to death or serious injury.

### **^ WARNING**

**Lug nuts are prone to loosen after being first assembled. Death or serious injury can result.**

**Check lug nuts for tightness on a new trailer, and after re-mounting a wheel at 10, 25 and 50 miles.**

### **^ WARNING**

**Inadequate lug nut torque can cause a wheel separating from the trailer, leading to death or serious injury can result.**

**Be sure lug nuts are tight before each tow.**

### **2.2.9 IMPROPER LOADING**

The total weight of the load you put in or on the trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR). If you do not know the empty weight of the trailer plus the cargo weight, you must weigh the loaded trailer at a commercial scale. In addition, you must distribute the load in the trailer such that the load on any axle does not exceed the Gross Axle Weight Rating (GAWR). If your trailer is equipped with a Tire & Loading Information Placard, the cargo capacity weight stated on that placard is only a close estimate. The GVWR and GAWR are listed on the Certification /VIN label mounted on the front left side of the trailer.

### **^ WARNING**

**An overloaded trailer can result in failure or in loss of control of the trailer, leading to death or serious injury.**

**Never load a trailer so the weight on any tire exceeds its rating.**

**Never exceed the trailer Gross Vehicle Weight Rating (GVWR).**

**Never exceed an axle Gross Axle Weight Rating (GAWR).**

### **^ WARNING**

#### OVERLOAD HAZARD

**Risk of death due to loss of control.**

- **Never exceed the trailer Gross Vehicle Weight Rating (GVWR).**
- **You must weigh your LOADED TRAILER to be sure you do not exceed the GVWR.**

### **2.2.10 UNSAFE LOAD DISTRIBUTION**

Improper front/rear load distribution can lead to poor trailer sway stability or poor tow vehicle handling. Poor trailer sway stability results from tongue weights that are too low, and poor tow vehicle stability results from tongue weights that are too high. Refer to "Loading the Trailer" for more information.

In the table below, the second column shows the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Trailer Weight, or "GTW") that should appear on the tongue of the trailer. For example, a gooseneck trailer, with a loaded weight of 12,000 pounds, should have 20-25% of 12,000 pounds (2400-3000 lbs.) on the hitch. After loading, be sure to check that none of the axles are overloaded.

Tongue Weight as a Percentage of Loaded Trailer Weight	
Type of Hitch	Percentage
Tagalong	10–15% for large trailers
	6-10% for smaller trailers
Gooseneck	20–25%

Uneven left/right load distribution can cause tire, wheel, axle or structural failure. Be sure your trailer is evenly loaded left/right.

## General Safety Information

Towing stability also depends on keeping the center of gravity as low as possible.

### **^ WARNING**

**Improper tongue weight (load distribution) can result in loss of control of the trailer, leading to death or serious injury.**

**Make certain that tongue weight is within the allowable range.**

**Be sure to:**

- **Distribute the load front-to-rear to provide proper tongue weight (see chart).**
- **Distribute the load evenly, right and left.**
- **Keep the center of gravity low.**

### **2.2.11 SHIFTING CARGO**

Since the trailer “ride” can be bumpy and rough, you must secure your cargo so it does not shift while the trailer is being towed.

### **^ WARNING**

**A shifting load can result in failure, or to loss of control of the trailer, and can lead to death or serious injury.**

**You must tie down all loads with proper sized fasteners, ropes, straps, etc. to prevent the load from shifting while trailering.**

Be certain the door safety latch is engaged to prevent the door latch from opening.

### **^ WARNING**

**If the door opens, your cargo may be ejected onto the road, resulting in death or serious injury to other drivers.**

**Always secure the door latch after closing. Place a linchpin in the catch.**

### **2.2.12 INAPPROPRIATE CARGO**

Your trailer may be designed for specific cargo, for example, only for horses. If your trailer is designed for specific cargo, only carry that cargo in the trailer. A trailer must not be used to carry certain items, such as people, containers of hazardous substances or containers of flammable substances. A trailer not designed with living quarters should only be used for transportation of its intended cargo.

### **^ WARNING**

**Never transport people inside a trailer, even if it has living quarters or dressing room. Besides putting their lives at risk, the transport of people may be illegal.**

### **^ WARNING**

**Do not occupy a trailer while operating portable fuel burning appliances, such as, portable heater, portable stove or generator as carbon monoxide poisoning can occur and may result in death or serious injury.**

**A trailer not designed and equipped with a living quarters should only be used for transportation of its intended cargo.**

### **^ WARNING**

**Do not transport flammable, explosive, poisonous or other dangerous materials in your trailer.**

**Exceptions:**

- **Fuel stored in proper containers used in trailer living quarters for cooking.**
- **Fuel stored in the tank of an on-board generator.**

### **2.2.13 INOPERABLE BRAKES, LIGHTS OR MIRRORS**

Electric brakes and lights on a trailer are controlled by the connection to the tow vehicle, through the 7-pin electrical connector. Be sure the electric brakes and all of the lights on your trailer are functioning properly before towing your trailer.

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer, you must operate the brake controller while trying to pull the trailer in order to confirm the electric brakes operate. While towing the trailer at less than 5 mph, manually operate the electric brake controller in the tow vehicle cab. You should feel the operation of the trailer brakes.

### **^ WARNING**

**It is highly recommended the trailer be towed by a vehicle equipped with a brake controller.**

## General Safety Information

### **^ WARNING**

Improper electrical connection between the tow vehicle and the trailer will result in inoperable lights and electric brakes, and can lead to collision.

Before each tow:

- Check to ensure all lights work.
- Check that the electric brakes work by operating the brake controller inside the tow vehicle.

Standard mirrors usually do not provide adequate visibility for viewing traffic to the sides and rear of a towed trailer. You must provide mirrors that allow you to safely observe approaching traffic.

### **2.2.14 HAZARDS FROM MODIFYING YOUR TRAILER**

Essential safety items can be damaged by altering your trailer. Even simply driving a nail or screw to hang something can damage an electrical circuit or other feature of the trailer.

Before making any alteration to your trailer, contact your dealer or Lakota Trailers at 574-848-1636 and describe the alteration you are contemplating. Altering your trailer may void the manufacturer's warranty. See "Warranty" in Section 1.

### **2.2.15 HAZARDS TO HORSES**

Before hauling a horse, you must be aware of its temperament.

The layout of a horse trailer is designed to safely contain your horse. The trailer is equipped with stall dividers and tie rings to secure the horse. Restraining a horse without using a combination of a tie-strap and stall dividers may result in serious injury or death to the horse.

Before loading your horse, inspect the interior of the horse trailer to insure no hazards are present. Read the "Loading the Horse Trailer" section of this manual for specific instructions regarding trailering of horses.

### **^ WARNING**

When a horse is frightened, it is capable of inflicting serious injury or death to a human handler.

Know your horse's temperament before attempting to trailer it.

Handling a horse that is not trailer-acclimated may result in injury or death, or damage to your trailer.

Do not haul an unbroken horse in this trailer.

Horses must have a halter.

### **^ CAUTION**

Failure to secure a horse using a tie strap may result in its serious injury or death.

### **^ CAUTION**

The trailer interior may contain hazards to a horse that can result in its serious injury or death.

Before loading a horse, inspect the trailer interior and adjust or repair all loose and protruding features such as handles, loose or broken parts of the trailer, etc.

Before towing trailer:

- Lock all stall dividers.
- Be sure all saddles, tack and equipment, as well as horse(s), are prevented from being thrown about.

### **^ CAUTION**

Hauling a horse in a livestock trailer may result in its serious injury or death.

Do not carry a horse in a livestock trailer. Use a trailer designed to carry horses.

### **2.2.16 HAZARDS FROM ACCESSORIES**

The "Accessories" chapter of this manual contains some information about certain optional accessories that may be on your trailer. Read and follow all of these instructions before operating the accessories.



## General Safety Information

### 2.2.17 SAFETY WARNING LABELS ON YOUR TRAILER

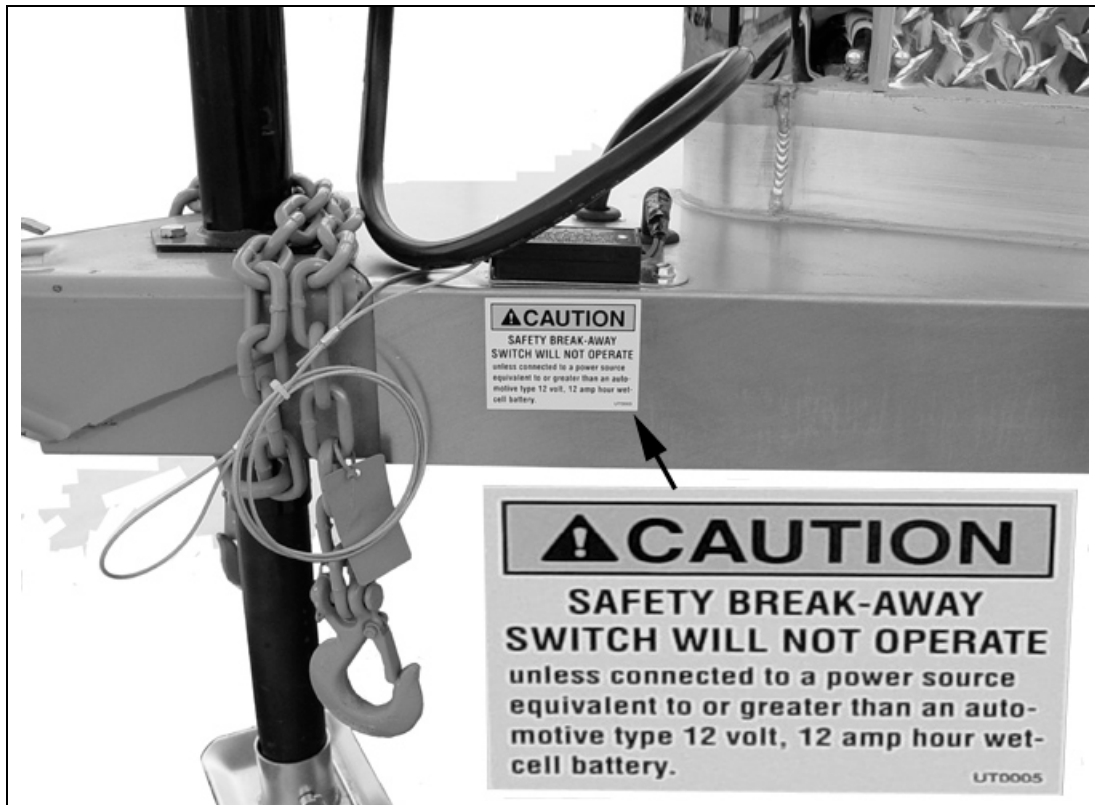


Figure 2-1 Tagalong Hitch Safety Warning Label

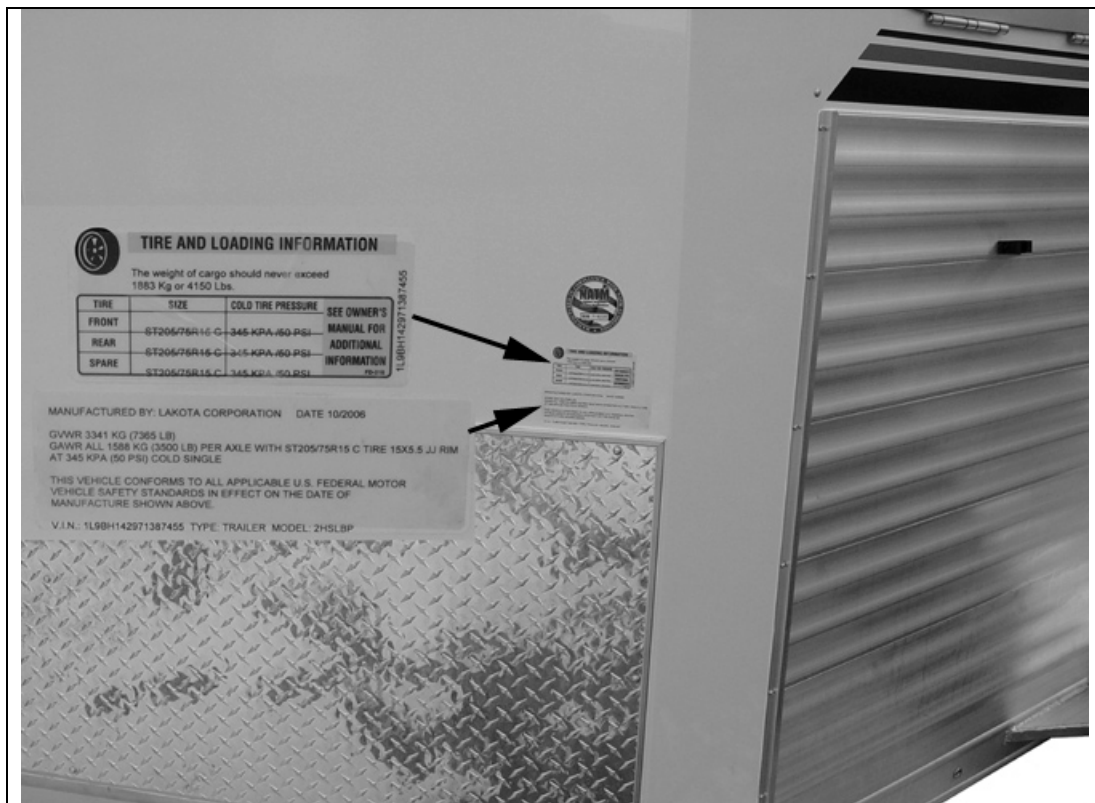


Figure 2-2 - Tagalong Front Left Side Tire And VIN Labels



## General Safety Information



Figure 2-3 - Gooseneck Front Left Side Safety Warning And VIN Labels



Figure 2-4 – All Trailers, Wheel Lug Safety Warning Label On Fenders



Figure 2-5 – Sleep Warning Label, On Wall In Tack Or Dressing Room

## General Safety Information

### **^ WARNING**

**To protect you and others against death or serious injury, all of the labels must be on the trailer and must be legible.**

**If any of these labels are missing or cannot be read, call Lakota Trailers at 574-848-1636 for replacement labels.**

**You will need to provide us with the number shown at the bottom of the label(s) in order for us to send the correct one(s).**

### **2.2.18 TRAILER TOWING GUIDE**

Driving a vehicle with a trailer in tow is vastly different from driving the same vehicle without a trailer in tow. Acceleration, maneuverability and braking are all diminished with a trailer in tow. It takes longer to get up to speed, you need more room to turn and pass, and more distance to stop when towing a trailer. You will need to spend time adjusting to the different feel and maneuverability of the tow vehicle with a loaded trailer. Because of the significant differences in all aspects of maneuverability when towing a trailer, the hazards and risks of injury are also much greater than when driving without a trailer. You are responsible for keeping your vehicle and trailer in control, and for all the damage that is caused if you lose control of your vehicle and trailer.

As you did when learning to drive an automobile, find an open area with little or no traffic for your first practice trailering. Of course, before you start towing the trailer, you must follow all of the instructions for coupling, inspection, testing and loading. Also, before you start towing, adjust the mirrors so you can see the trailer, as well as the area to the rear of it.

Drive slowly at first, 5 mph or so, and turn the wheel to get the feel of how the tow vehicle and trailer combination responds. Next, make some right and left hand turns. Watch in your side mirrors to see how the trailer follows the tow vehicle. Turning with a trailer attached requires more room.

Stop the rig a few times from speeds no greater than 10 mph. If your trailer is equipped with brakes, try using different combinations of trailer brake and tow vehicle brake. Note the effect the trailer brakes have when they are the only brakes used. When properly adjusted, the trailer brakes will come on just before the tow vehicle brakes.

It will take practice to learn how to back up a tow vehicle with a trailer attached. Take it slow. Before backing up, get out of the tow vehicle and look behind the trailer to make sure there are no obstacles. Some drivers place their hands at the bottom of the steering wheel, and while the tow vehicle is in reverse, “think” of the hands as being on the top of the wheel. When the hands move to the right

(counter-clockwise, as you would do to turn the tow vehicle to the left when moving forward), the rear of the trailer moves to the right. Conversely, rotating the steering wheel clockwise with your hands at the bottom of the wheel will move the rear of the trailer to the left, while backing up. If you are towing a bumper hitch rig, be careful not to allow the trailer to turn too much, because it will hit the rear of the tow vehicle. To straighten the rig, either pull forward, or turn the steering wheel in the opposite direction.

### **2.2.19 SAFE TRAILER TOWING GUIDELINES**

- Before towing, check coupling, safety chain, breakaway brake, tires, wheels and lights.
- Check ramps and/or doors are in correct position and fastened for travel.
- Verify all safety latch pins on ramps, doors, gates, and rods are properly installed.
- Check the lug nuts or bolts for proper tightness.
- Check coupler tightness after towing 50 miles.
- Adjust the brake controller to engage the trailer brakes before the tow vehicle brakes. Follow the instructions given with the brake controller manufacturer’s literature.
- Use your mirrors to verify you have room to change lanes or pull into traffic.
- Use your turn signals well in advance.
- Allow plenty of stopping space for your trailer and tow vehicle.
- Do not drive so fast that the trailer begins to sway due to speed. Generally, never drive faster than 60 m.p.h.
- Allow plenty of room for passing. A rule of thumb is the passing distance with a trailer is 4 times the passing distance without a trailer.
- Use lower gears for climbing and descending grades.
- Do not ride the brakes while descending grades unless absolutely necessary. They may get so hot they stop working. Then you will potentially have a runaway tow vehicle and trailer.
- To conserve fuel, don’t use full throttle to climb a hill. Instead, build speed on the approach.
- Slow down for bumps in the road. Take your foot off the brake when crossing the bump.
- Do not brake while in a curve unless absolutely necessary. Instead, slow down before you enter the curve.

## General Safety Information

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- Do not apply the tow vehicle brakes to correct extreme trailer swaying. Instead, lightly apply the trailer brakes with the hand controller.
- Make regular stops, about once each hour. Confirm that:
  - The coupler is secure to the hitch and is locked,
  - Electrical connections are made,
  - There is appropriate slack in the safety chains,
  - There is appropriate slack in the breakaway switch pullpin lanyard,
  - The tires are not visibly low on pressure, and
  - The cargo is secure and in good condition.

### **2.2.20 REPORTING SAFETY DEFECTS**

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

If NHTSA receives similar complaints, it may open an investigation, and if it finds 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 Lakota Trailers.

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to <http://www.safercar.gov>; or write to: Administrator, NHTSA, 1200 North Jersey Avenue SE., Washington, DC 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

Call 574-848-1636 to reach Lakota Trailers.

## 3 TIRE SAFETY INFORMATION

This portion of the manual contains tire safety information as required by 49 CFR 575.6.

Section 3.1 contains “Trailer Tire Information”.

Section 3.2 contains “Steps for Determining Correct Load Limit - Trailer”.

Section 3.3 contains “Steps for Determining Correct Load Limit – Tow Vehicle”.

Section 3.4 contains a Glossary of Tire Terminology, including “cold inflation pressure”, “maximum inflation pressure”, “recommended inflation pressure”, and other non-technical terms.

Section 3.5 contains information from the NHTSA brochure entitled “Tire Safety – Everything Rides On It”.

This brochure, as well as the preceding subsections, describe the following items;

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:

Cold inflation pressure.

Vehicle Placard and location on the vehicle.

Adverse safety consequences of under inflation (including tire failure).

Measuring and adjusting air pressure for proper inflation.

- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:

Locating and understanding the load limit information, total load capacity, and cargo capacity.

Calculating total and cargo capacities with varying seating configurations including quantitative examples showing/illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.

Determining compatibility of tire and vehicle load capabilities.

Adverse safety consequences of overloading on handling and stopping on tires.

### 3.1 TRAILER TIRE INFORMATION

Trailer tires may be worn out even though they still have plenty of tread left. This is because trailer tires have to carry a lot of weight all the time, even when not in use. It is actually better for the tire to be rolling down the road than to be idle. During use, the tire releases lubricants that are beneficial to tire life. Using the trailer tires often also helps prevent flat spots from developing.

The main cause of tire failure is improper inflation. Check the cold tire inflation pressures at least once a week for proper inflation levels. “Cold” means the tires are at the same temperature as the surrounding air, such as when the vehicle has been parked overnight. Wheel and tire manufacturers recommend adjusting the air pressure to the trailer manufacturer’s recommended cold inflation pressure, in pounds per square inch (PSI) stated on the vehicle’s Federal Certification Label or Tire Placard when the trailer is loaded to its gross vehicle weight rating (GVWR). If the tires are inflated to less than the recommended inflation level or the GVWR of the trailer is exceeded, the load carrying capacity of the tire could be dramatically affected. If the tires are inflated more than the recommended inflation level, handling characteristics of the tow vehicle/trailer combination could be affected. Refer to the owner’s manual or talk to your dealer or vehicle manufacturer if you have any questions regarding proper inflation practices.

Tires can lose air over a period of time. In fact, tires can lose 1 to 3 PSI per month. This is because molecules of air, under pressure, weave their way from the inside of the tire, through the rubber, to the outside. A drop in tire pressure could cause the tire to become overloaded, leading to excessive heat buildup. If a trailer tire is under-inflated, even for a short period of time, the tire could suffer internal damage.

High speed towing in hot conditions degrades trailer tires significantly. As heat builds up during driving, the tire’s internal structure starts to breakdown, compromising the strength of the tire. It is recommended to drive at moderate speeds.

Statistics indicate the average life of a trailer tire is about five years under normal use and maintenance conditions. After three years, replacing the trailer tires with new ones should be considered, even if the tires have adequate tread depth. Some experts claim after five years, trailer tires are considered worn out and should be replaced, even if they have had minimal or no use. This is such a general statement it may not apply in all cases. It is best to have your tires inspected by a tire supplier to determine if your tires need to be replaced.

If you are storing your trailer for an extended period, make sure the tires are fully inflated to the maximum rated pressure and you store them in a cool, dry place, such as a garage. Use tire covers to protect the trailer tires from the harsh effects of the sun.

### 3.2 STEPS FOR DETERMINING CORRECT LOAD LIMIT – TRAILER

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all

## Tire Safety Information

trailers there is a Federal Certification/VIN label located on the forward half of the left (road) side of the unit. This Certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer 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.

If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. 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 trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer cannot exceed the stated GVWR.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or under inflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the Certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

### 3.2.1 TRAILERS 10,000 POUNDS GVWR OR LESS

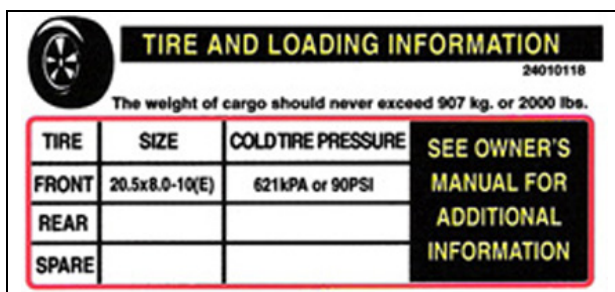


Figure 3-1 - Information Placard

12. Locate the statement, "The weight of cargo should never exceed XXX kg or XXX lbs.," on your vehicle's placard. See figure 3-1.
13. This figure equals the available amount of cargo and luggage load capacity.

14. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.

The trailer's placard refers to the Tire Information Placard attached adjacent to or near the trailer's VIN (Certification) label at the left front of the trailer.

### 3.2.2 TRAILERS OVER 10,000 POUNDS GVWR

(Note: These trailers are not required to have a tire information placard on the trailer and may not have one installed)

15. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
16. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
17. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

## 3.3 STEPS FOR DETERMINING CORRECT LOAD LIMIT – TOW VEHICLE

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

## 3.4 GLOSSARY OF TIRE TERMINOLOGY

### Accessory weight

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

# Tire Safety Information

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## **Bead**

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

## **Bead separation**

This is the breakdown of the bond between components in the bead.

## **Bias ply tire**

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

## **Carcass**

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

## **Chunking**

The breaking away of pieces of the tread or sidewall.

## **Cold inflation pressure**

The pressure in the tire before you drive.

## **Cord**

The strands forming the plies in the tire.

## **Cord separation**

The parting of cords from adjacent rubber compounds.

## **Cracking**

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

## **CT**

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

## **Curb weight**

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

## **Extra load tire**

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

## **Groove**

The space between two adjacent tread ribs.

## **Gross Axle Weight Rating**

The maximum weight that any axle can support, as published on the Certification/VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

## **Gross Vehicle Weight Rating**

The maximum weight of the fully loaded trailer, as published on the Certification/VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

## **Hitch Weight**

The downward force exerted on the hitch ball by the trailer coupler.

## **Innerliner**

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

## **Innerliner separation**

The parting of the innerliner from cord material in the carcass.

## **Intended outboard sidewall**

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

## **Light truck (LT) tire**

A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles. May be used on trailers.

## **Load rating**

The maximum load a tire is rated to carry for a given inflation pressure.

## **Maximum load rating**

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

## **Maximum permissible inflation pressure**

The maximum cold inflation pressure to which a tire may be inflated.

## **Maximum loaded vehicle weight**

The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

## **Measuring rim**

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

## **Non-pneumatic rim**

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

# Tire Safety Information

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## **Non-pneumatic spare tire assembly**

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

## **Non-pneumatic tire**

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

## **Non-pneumatic tire assembly**

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

## **Normal occupant weight**

This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

## **Occupant distribution**

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

## **Open splice**

Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

## **Outer diameter**

The overall diameter of an inflated new tire.

## **Overall width**

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

## **Pin Weight**

The downward force applied to the 5<sup>th</sup> wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

## **Ply**

A layer of rubber-coated parallel cords.

## **Ply separation**

A parting of rubber compound between adjacent plies.

## **Pneumatic tire**

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

## **Production options weight**

The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of

those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

## **Radial ply tire**

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

## **Recommended inflation pressure**

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

## **Reinforced tire**

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

## **Rim**

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

## **Rim diameter**

This means the nominal diameter of the bead seat.

## **Rim size designation**

This means the rim diameter and width.

## **Rim type designation**

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

## **Rim width**

This means the nominal distance between rim flanges.

## **Section width**

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

## **Sidewall**

That portion of a tire between the tread and bead.

## **Sidewall separation**

The parting of the rubber compound from the cord material in the sidewall.

## **Special Trailer (ST) tire**

The "ST" is an indication the tire is for trailer use only.

## **Test rim**

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

## **Tread**

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



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## **Tread rib**

A tread section running circumferentially around a tire.

## **Tread separation**

Pulling away of the tread from the tire carcass.

## **Treadwear indicators (TWI)**

The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

## **Vehicle capacity weight**

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

## **Vehicle maximum load on the tire**

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

## **Vehicle normal load on the tire**

The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

## **Weather side**

The surface area of the rim not covered by the inflated tire.

## **Wheel center member**

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

## **Wheel-holding fixture**

The fixture used to hold the wheel and tire assembly securely during testing.

## **3.5 TIRE SAFETY - EVERYTHING RIDES ON IT**

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

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

Studies of tire safety show maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely

handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

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

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

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

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

### **3.5.1 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.

### **3.5.2 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 near the left front.

### **3.5.3 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



## Tire Safety Information

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.)

Manufacturers of passenger vehicles and light trucks 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.

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

### **3.5.5 STEPS FOR MAINTAINING PROPER TIRE PRESSURE**

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.

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

If you have been driving your vehicle and think 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 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.

### **3.5.6 TIRE SIZE**

To maintain tire safety, purchase new tires 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.

### **3.5.7 TIRE TREAD**

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

### **3.5.8 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 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.

### **3.5.9 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.

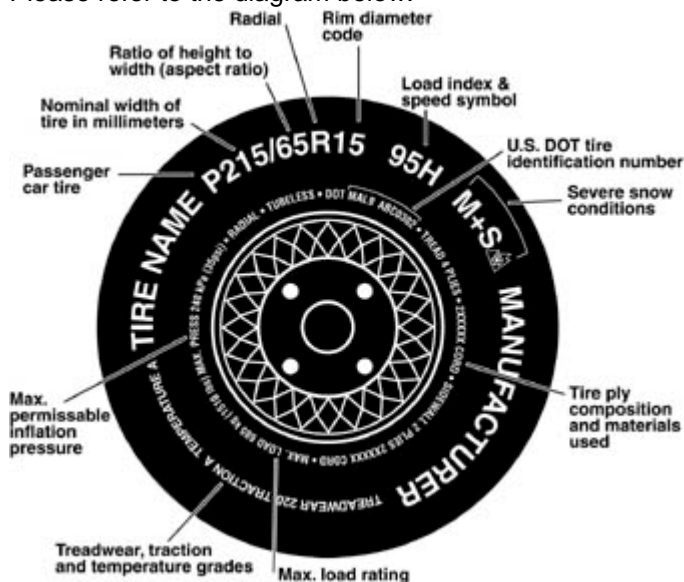
# Tire Safety Information

## 3.5.10 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.

### 3.5.10.1 INFORMATION ON PASSENGER VEHICLE TIRES

Please refer to the diagram below.



#### P

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

#### Next number

This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

#### Next number

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

#### R

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

#### Next number

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

#### Next number

This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

#### M+S

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

#### 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
J	62 mph
L	75 mph
Q	99mph
R	106 mph
S	112mph
T	118 mph
H	130 mph
Y	186 mph

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

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

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

#### Tire Ply Composition and Materials Used

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

#### Maximum Load Rating

This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

#### Maximum Permissible Inflation Pressure

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

### 3.5.10.2 UTQGS INFORMATION

#### Treadwear Number

This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread

## Tire Safety Information

to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

### Traction Letter

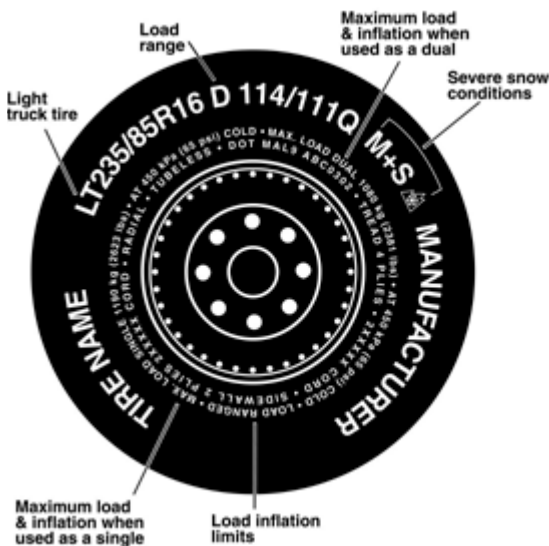
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

### Temperature Letter

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

### 3.5.10.3 ADDITIONAL INFORMATION ON LIGHT TRUCK TIRES

Please refer to the following diagram.



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

### LT

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

### ST

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

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

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

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

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

### Load Range

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

### 3.5.11 TIRE SAFETY TIPS

#### Preventing Tire Damage

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

#### Tire Safety Checklist

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

## 4 COUPLING TO THE TOW VEHICLE

Follow all of the safety precautions and instructions in this manual to ensure safety of persons, cargo, and satisfactory life of the trailer.

### 4.1 USE AN ADEQUATE TOW VEHICLE AND HITCH

If the vehicle or hitch is not properly selected and matched to the Gross Vehicle Weight Rating (GVWR) of your trailer, you can cause an accident that could lead to death or serious injury. If you already have a tow vehicle, know your vehicle tow rating and make certain the trailer's rated capacity is less than or equal to the tow vehicle's rated towing capacity.

#### **^ DANGER**

**Use of a hitch with a load rating less than the load rating of the trailer can result in loss of control and may lead to death or serious injury.**

**Use of a tow vehicle with a towing capacity less than the load rating of the trailer can result in loss of control, and may lead to death or serious injury.**

**Be sure your hitch and tow vehicle are rated for the Gross Vehicle Weight Rating of your trailer.**

#### **^ WARNING**

**It is highly recommended that the trailer be towed by a vehicle equipped with a brake controller.**

#### 4.1.1 TRAILER INFORMATION

Figure 4-1 shows the location of the Certification/Vehicle Identification Number (VIN) tag on a tagalong trailer. The Certification/VIN tag is located on the forward left side on all trailers.



Figure 4-1 - Certification / VIN Tag Location

The trailer Certification/VIN tag contains the following critical safety information for the use of your trailer:

**MANUFACTURER:** Lakota Trailer

**DATE OF MANUFACTURE:** Month and year the trailer was manufactured.

**GVWR:** The Gross Vehicle Weight Rating is the maximum allowable gross weight of the trailer and its contents. The gross weight of the trailer includes the weight of the trailer and all of the items within it (such as cargo, water, food and other supplies).

**GAWR:** The Gross Axle Weight Rating is the maximum gross weight an axle can support. It is the lowest of axle, wheel, or tire rating. Sometimes the tire or wheel rating is lower than the axle manufacturers rating, and will then determine GAWR.

The sum total of the GAWR for all trailer axles may be less than the GVWR for the trailer, because some of the trailer load is carried by the tow vehicle, rather than by the trailer axle(s). The total weight of the cargo and trailer must not exceed the GVWR, and the load on an axle must not exceed its GAWR.

**TIRE SIZE:** The tire size recommended for your trailer and load range.

**PSIC:** The "pounds per square inch- cold" is the tire pressure (Kilopascals / Pounds per Square Inch) measured when Cold.

**VIN:** The Vehicle Identification Number.

**VEHICLE TYPE:** Trailer.

**CERTIFICATION STATEMENT:** "This trailer meets all the Federal Motor Vehicle Safety Standards in effect on the date of manufacture shown above".

#### 4.1.2 TOW VEHICLE

When equipping a new vehicle or an older vehicle to tow your trailer, ask the vehicle dealer for advice on how to outfit the towing vehicle. Discuss the following information and equipment with the vehicle dealer.

**Overall Carrying and Towing Capacity of Vehicle:** Vehicle manufacturers will provide you with the maximum towing capacities of their various models, as well as the GCWR. No amount of reinforcement will give a 100 horsepower, 2,500 pound truck the towing capacity a 300 horsepower, 5,000 pound truck has.

# Coupling To The Tow Vehicle

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**Towing Hitch:** The towing hitch attached to your tow vehicle must have a capacity equal to or greater than the load rating of the trailer you intend to tow. The hitch capacity must also be matched to the tow vehicle capacity.

**Suspension System:** A tow vehicle equipped with a factory installed "Towing Package" likely comes equipped with heavy duty springs, heavy duty tires and other suspension components which are able to serve the size and weight of the trailer that the vehicle is rated to tow. However, the addition of additional equipment may further improve the tow vehicle performance. These may include adjustable air shocks, helper springs, etc.

**Brake Controller:** The brake controller is part of the tow vehicle and is essential in the operation of the electric brakes on the trailer. If your trailer has electric brakes it requires a brake controller be installed at the driver's position. The brake controller is not the same as the safety breakaway brake system that is installed on the trailer.

**Side View Mirrors:** The size of the trailer being towed and your state law regulations determine the size of the mirrors. However, some states prohibit extended mirrors on a tow vehicle, except while a trailer is actually being towed. In this situation, detachable extended mirrors are necessary. Check with your dealer or the appropriate state agency for mirror requirements.

**Heavy Duty Flasher:** A Heavy Duty Flasher is an electrical component that may be required when your trailer turn signal lights are attached to the tow vehicle flasher circuit.

**Electrical Connector:** An Electrical Connector connects the light and brake systems on the trailer to the light and brake controls on the towing vehicle.

**Heavy Duty Engine Oil Cooling System:** The tow vehicle engine works harder when a trailer is being towed. Depending on the size of the trailer, you may need to install a separate engine oil cooler. Inadequate cooling may result in sudden engine failure. Ask the tow vehicle dealer if it is necessary to install a heavy duty cooling system.

**Automatic Transmission Oil Cooler:** The automatic transmission of a towing vehicle handles more power when a trailer is being towed. Inadequate cooling will shorten transmission life, and may result in sudden transmission failure. Ask the tow vehicle dealer if it is necessary to install a separate oil cooler for the automatic transmission.

**Fire Extinguisher:** It is sensible to have a fire extinguisher in the tow vehicle.

**Emergency Flares and Emergency Triangle Reflectors:** It is wise to carry these warning devices even if you are not towing a trailer. It is particularly important to have these

when towing a trailer because the hazard flashers of your towing vehicle will not operate for as long a period of time when the battery is running both the trailer lights and tow vehicle lights.

## **4.2 COUPLING AND UNCOUPLING THE TRAILER**

A secure coupling (or fastening) of the trailer to the tow vehicle is essential. A loss of coupling may result in death or serious injury. Therefore, you must understand and follow all of the instructions for coupling.

The following parts are involved in making a secure coupling between the trailer and tow vehicle:

**Coupling:** That part of the trailer connecting mechanism by which the connection is actually made to the trailer hitch. This does not include any structural member, extension of the trailer frame, or brake controller.

**Hitch:** That part of the connecting mechanism including the ball support platform and ball and those components that extend and are attached to the towing vehicle, including bumpers intended to serve as hitches.

**Safety chains:** Chains are permanently attached to the trailer such that if the coupler connection comes loose, the safety chains can keep the trailer attached to the tow vehicle. With properly rigged safety chains, it is possible to keep the tongue of the trailer from digging into the road pavement, even if the coupler-to-hitch connection comes apart.

**Trailer lighting (and braking) connector:** A device that connects electrical power from the tow vehicle to the trailer. Electricity is used to turn on brake lights, running lights, and turn signals as required. In addition, if your trailer has a separate braking system, the electrical connector will also supply power to the trailer brakes from the tow vehicle.

**Breakaway switch:** If the trailer becomes de-coupled from the towing vehicle, the breakaway switch lanyard, attached independently to the tow vehicle hitch, will pull a pin in the emergency electrical breakaway switch on the trailer. The breakaway switch is activated by a separate battery supply in the trailer such as to energize the trailer brakes independently of the towing vehicle. It is important to check the state of charge of the emergency breakaway battery before each trip. Simply pull the pin out of the switch by hand and then try to pull the trailer. If you feel a significant drag force the brakes are activated. Be sure to re-insert the pin in the break-away switch.

**Jack:** A device on the trailer used to raise and lower the trailer tongue.

## Coupling To The Tow Vehicle

### **^ WARNING**

An improperly coupled trailer can result in death or serious injury.

Do not move the trailer until:

- The coupler is secured and locked to hitch;
- The safety chains are secured to the tow vehicle; and
- The trailer jack(s) are fully retracted.

Do not tow the trailer on the road until:

- Tires and wheels are checked;
- The trailer brakes are checked;
- The breakaway switch is connected to the tow vehicle;
- The load is secured to the trailer; and
- The trailer lights are connected and checked.

#### **4.2.1 VARIOUS COUPLER DESIGNS**

Trailers are produced with a variety of coupler devices. One of the sections below will pertain to your trailer.

- Tagalong Ball Coupler
- Gooseneck Ball Coupler

If the coupler on your trailer does not resemble one of the couplers shown in the figures, see the separate coupler instructions. If you do not have separate coupler instructions, call **Error! Reference source not found.**s at **Error! Reference source not found.** for assistance.

#### **4.3 TAGALONG TRAILER WITH BALL COUPLER**

A ball hitch coupler connects to a ball that is located on or under the rear bumper of tow vehicle. See figure 4-2. This system of coupling a trailer to a tow vehicle is sometimes referred to as "bumper pull."



*Figure 4-2 - Trailer With Ball Hitch Coupler*

We have utilized a ball hitch coupler suitable for the size and weight of the trailer. The load rating of the coupler and the necessary ball size are listed on the trailer tongue. You must provide a hitch and ball for your tow vehicle, where the load rating of the hitch and ball is equal to or greater than that of your trailer **and** matches the size of the ball coupler. If the hitch ball is too small, too large, is underrated, is loose or is worn, the trailer can come loose from the tow vehicle, and may cause death or serious injury.

**THE TOW VEHICLE, HITCH AND BALL MUST HAVE A RATED TOWING CAPACITY EQUAL TO OR GREATER THAN THE TRAILER Gross Vehicle Weight Rating (GVWR).**

**IT IS ESSENTIAL THE HITCH BALL BE THE SAME SIZE AS THE COUPLER.**

The ball size and load rating (capacity) are marked on the ball; hitch capacity is marked on the hitch.

#### **4.3.1 BEFORE COUPLING THE TRAILER TO THE TOW VEHICLE**

Be sure the size and rating of hitch ball match the size and rating of the coupler. Hitch balls and couplers are marked with their size and rating.



## Coupling To The Tow Vehicle

### **^ WARNING**

**Coupler-to-hitch mismatch can result in uncoupling, leading to death or serious injury.**

**Be sure the LOAD RATING of the hitch ball is equal or greater than the load rating of the coupler.**

**Be sure the SIZE of the hitch ball matches the size of the coupler.**

- Wipe the hitch ball clean and inspect it visually and by feel for flat spots, cracks and pits.

### **^ WARNING**

**A worn, cracked or corroded hitch ball can fail while towing, and may result in death or serious injury.**

**Before coupling trailer, inspect the hitch ball for wear, corrosion and cracks.**

**Replace worn or damaged hitch ball.**

- Rock the ball to make sure it is tight to the hitch, and visually check that the hitch ball nut is solid against the lock washer and hitch frame.
- Wipe the inside and outside of the coupler clean and inspect it visually for cracks and deformations; feel the inside of the coupler for worn spots and pits.
- Be sure the coupler is tight to the tongue of the trailer. All coupler fasteners must be visibly solid against the trailer frame.

### **^ WARNING**

**A loose hitch ball nut can result in uncoupling, leading to death or serious injury.**

**Make sure the hitch ball is tight to the hitch before coupling the trailer.**

- Raise the bottom surface of the coupler to be above the top of the hitch ball.

#### **4.3.2 PREPARE THE COUPLER AND HITCH**

- Lubricate the hitch ball and the inside of the coupler with a thin layer of automotive bearing grease.
- Remove the safety latch pin and open the coupler locking mechanism.
  - In the open position, the coupler is able to drop fully onto the hitch ball.
  - See the coupler instructions for details of placing the coupler in the “open” position.
- Slowly back up the tow vehicle so that the hitch ball is near or aligned under the coupler.

#### **4.3.3 COUPLE THE TRAILER TO THE TOW VEHICLE**

- Lower the trailer tongue until the coupler fully engages the hitch ball. If the coupler does not line up with the hitch ball, adjust the position of the tow vehicle.
- Engage the coupler locking mechanism. In the engaged position, the locking mechanism securely holds the coupler to the hitch ball.
- Insert the safety lock pin through the hole in the coupler and engage locking mechanism.
- Be sure the coupler is all the way on the hitch ball and the locking mechanism is engaged. A coupler properly engaged will allow the coupler to raise the rear of the tow vehicle. Using the trailer jack, test to see you can raise the rear of the tow vehicle by 1 inch, after the coupler is locked to the hitch.

### **NOTICE**

**The tongue jack can be damaged by overloading. Do not use the tongue jack to raise the tow vehicle more than 1 inch.**

**If the coupler cannot be secured to the hitch ball, do not tow the trailer.** Call Lakota Trailers at 574-848-1636 or your dealer for assistance.

- Lower the trailer so its entire tongue weight is held by the hitch, and continue retracting the jack to its fully retracted position.
- Fully retract jack drop leg and insert pin.

#### **4.3.4 RIG THE SAFETY CHAINS**

- Visually inspect the safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
- Rig the safety chains so they:
  - Criss-cross underneath the coupler so if the trailer uncouples, the safety chains can hold the tongue up above the road. See figure 4-3.
  - Loop around a frame member of the tow vehicle or to holes provided in the hitch system (but, do **not** attach them to an interchangeable part of the hitch assembly)
  - Attach hooks up from underneath the hole (do not just drop into hole); and
  - Provide enough slack to permit tight turns, but not be close to the road surface to drag.

## Coupling To The Tow Vehicle

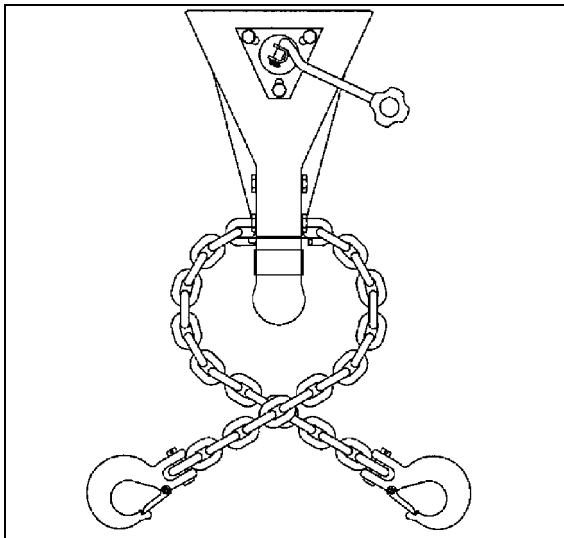


Figure 4-3 - Proper Safety Chain Arrangement

### **^ WARNING**

**Incorrect rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury, if the trailer uncouples from the tow vehicle.**

**Chains must:**

- **Fasten to frame of tow vehicle, not to hitch or ball.**
- **Cross underneath hitch and coupler with minimum slack to permit turning and to hold tongue up, if the trailer comes loose.**

### 4.3.5 CONNECT THE 7-PIN CONNECTOR

Connect the trailer lights to the tow vehicle's electrical system using the 7-pin connector.

- Check **all** lights for proper operation. Repair if needed.
- Check electric brakes for proper operation using brake controller mounted in the cab.

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer on the road, you must operate the brake controller while trying to pull the trailer in order to confirm that the electric brakes operate. While towing the trailer at less than 5 m.p.h., manually operate the electric brake controller in the tow vehicle cab. You should feel the operation of the trailer brakes.

### **^ WARNING**

**Improper electrical connection between the tow vehicle and the trailer will result in inoperable lights and electric brakes, and can lead to collision.**

**Before each tow:**

- **Check to ensure all lights work.**
- **Check to ensure the brakes work by operating the brake controller inside the tow vehicle.**

### 4.3.6 ATTACH AND TEST ELECTRIC BREAKAWAY BRAKE SYSTEM

If the coupler or hitch fails, a properly connected and working breakaway brake system will apply electric brakes on the trailer. The safety chains will keep the tow vehicle attached and as the brakes are applied at the trailer's axles, the trailer/tow vehicle combination will come to a controlled stop.

The breakaway brake system includes a battery, a switch with a pullpin and lanyard, and a breakaway brake controller. Read and follow the instructions here, as well as the instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, call Lakota Trailers 574-848-1636 for assistance.

The breakaway brake system battery will trickle charge from the tow vehicle. Do not tow trailer if the battery requires recharging. A discharged breakaway brake battery will not activate the brakes if the trailer uncouples from the tow vehicle. The battery must be fully charged before towing trailer.

- Connect the pullpin lanyard to the tow vehicle so the pullpin will be pulled out before all of the slack in the safety chains is taken up. See figure 4-4. Do **not** connect the pullpin lanyard to a safety chain, hitch ball or hitch ball assembly. This would keep the breakaway brake system from operating when it is needed.

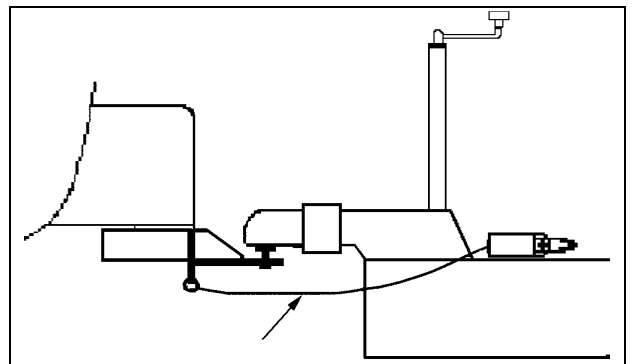


Figure 4-4 - Breakaway Brake Lanyard

- To test the breakaway brake battery, remove the pullpin from the switch and attempt to pull the trailer forward.



## Coupling To The Tow Vehicle

You should feel the trailer resisting being towed, but the wheels will not necessarily be locked. If the brakes do not function, do not tow the trailer until brakes, or battery, are repaired.

- Immediately replace the pullpin. The breakaway brake system battery discharges rapidly when the pullpin is removed.

### **^ WARNING**

**An ineffective breakaway brake system can result in a runaway trailer, leading to death or serious injury, if the coupler or ball hitch fails.**

**Connect the breakaway cable to the tow vehicle; and NOT to the hitch, ball or support.**

**Before towing the trailer, test the function of the breakaway brake system. If the breakaway brake system is not working, do not tow the trailer. Have it serviced or repaired.**

Do **not** tow the trailer with the breakaway brake system ON because the brakes will overheat which can result in permanent brake failure.

### **^ WARNING**

**Failure to replace the pullpin can result in ineffective brakes, leading to loss of control, serious injury or death.**

If you do not use your trailer for three or more months, or during winter months:

- Store the battery indoors; and
- Charge the battery every three months.

Replace the breakaway brake battery according to the intervals specified by battery manufacturer.

### **4.3.7 UNCOUPLING THE TAGALONG TRAILER**

- Park the trailer on a firm level surface.
- Block trailer tires to prevent the trailer from rolling, before jacking the trailer up.
- Disconnect the electrical connector.
- Disconnect the breakaway brake switch lanyard.
- Disconnect the safety chains from the tow vehicle.
- Unlock the coupler and open it.
- Before extending jack, make certain the ground surface below the jack pad will support the tongue load.
- Rotate the jack handle (or crank) clockwise. This will slowly extend the jack and transfer the weight of the trailer tongue to the jack.
- Raise the coupler above the tow vehicle hitch.

## **4.4 GOOSENECK TRAILER WITH BALL COUPLER**

A gooseneck ball coupler on the trailer connects to a gooseneck ball installed in the bed of the tow vehicle. Figure 4-5 shows a gooseneck trailer with a ball coupler. If your trailer is equipped with a king pin, refer to the information provided by the fifth-wheel manufacturer for connecting and disconnecting trailer.



*Figure 4-5 - Gooseneck Trailer With Ball Coupler*

We have utilized a gooseneck ball coupler suitable for the size and weight of the trailer. The load rating of the coupler and the necessary ball size are listed on the coupler.

You must provide a gooseneck ball and support structure marked with a rating that meets or exceeds the GVWR of your trailer **and** matches the size of the gooseneck ball coupler. If the gooseneck ball is too small, is underrated, is loose or is worn, the trailer can come loose from the tow vehicle, and may lead to death or serious injury.

**THE TOW VEHICLE, SUPPORT STRUCTURE AND GOOSENECK BALL MUST HAVE A RATED TOWING CAPACITY EQUAL TO OR GREATER THAN THE TRAILER Gross Vehicle Weight Rating (GVWR).**

**IT IS ESSENTIAL THE GOOSENECK BALL BE THE SAME SIZE AS THE GOOSENECK BALL COUPLER.**

The ball size and load rating (capacity) are marked on the ball; hitch capacity is marked on the hitch.

## Coupling To The Tow Vehicle

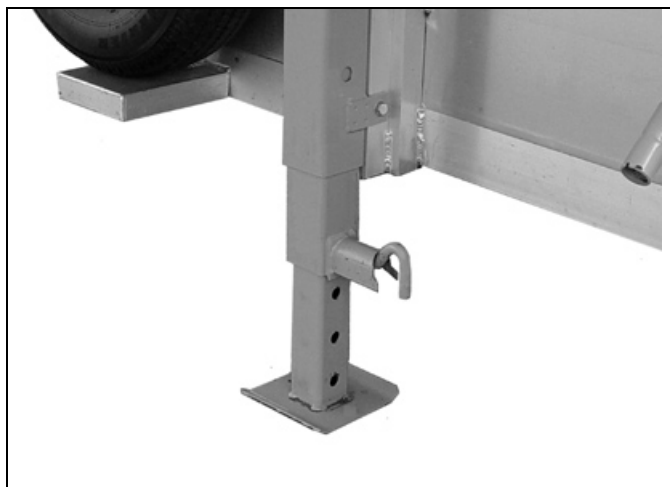
### **^ WARNING**

**Coupler-to-hitch mismatch can result in uncoupling, leading to death or serious injury.**

**Be sure the LOAD RATING of the hitch ball is equal or greater than the load rating of the coupler.**

**Be sure the SIZE of the hitch ball matches the size of the coupler.**

A gooseneck trailer will have one or two jacks for raising and lowering the coupler. Because several drop leg jack mechanisms are available, the general instructions below may vary slightly from the jack manufacturer's instructions. If the jack on your trailer does not resemble the jack shown in the figure 4-6, follow the instructions provided by the jack manufacturer. If you do not have these instructions, call Lakota Trailers at 574-848-1636 for assistance.



*Figure 4-6 - Drop Leg Jack*

#### **4.4.1 BEFORE COUPLING THE TRAILER TO THE TOW VEHICLE**

- Be sure the size and rating of the gooseneck ball match the size and rating of the coupler. Gooseneck balls and couplers are marked with their size and ratings.
- Wipe the gooseneck ball clean and inspect it visually and by feel for flat spots, cracks and pits.

### **^ WARNING**

**A worn, cracked or corroded gooseneck ball can fail while towing, and may result in death or serious injury.**

**Before coupling the trailer, inspect the gooseneck ball for wear, corrosion and cracks; and replace worn or damaged gooseneck ball.**

- Rock the ball to make sure it is tight to the ball support, and visually check that the ball nut is solid against the lock washer and ball support frame.

### **^ WARNING**

**A loose gooseneck ball can result in uncoupling, leading to death or serious injury.**

**Make sure the gooseneck ball nut is tight before coupling the trailer.**

- Wipe the inside and outside of the coupler clean and inspect it visually for cracks; and feel the inside of the coupler for worn spots and pits. If any of these conditions exist, have the coupler replaced before coupling the trailer.
- Lubricate the inside of the coupler with automotive bearing grease.
- Be sure the coupler is tight to the trailer. All coupler fasteners must be visibly solid against the trailer frame.
- Release the jack handle or crank from its holder.
- Rotate the handle/crank clockwise to raise the bottom surface of the coupler to be above the top of the ball.
- Lower tow vehicle tailgate.

#### **4.4.2 PREPARE THE COUPLER AND GOOSENECK BALL**

- Release the lock plate on the coupler. With the spring-loaded lock plate locking pin in the OPEN position, rotate the lock plate to a position that allows the ball to enter the coupler.
- Slowly back up the tow vehicle so the ball is aligned under the coupler.

### **^ WARNING**

**If the trailer drops during coupling, death or serious injury may result.**

**There must be no one under the trailer or coupler before or during the coupling operation.**

#### **4.4.3 COUPLE THE TRAILER TO THE TOW VEHICLE**

- Rotate the jack handle to retract the jack. If the coupler does not line up with the ball, raise the coupler again and adjust the position of the tow vehicle. Then lower the coupler over the ball. When the drop leg base is no longer resting on the ground, the towing vehicle hitch is holding all of the weight of the trailer tongue.
- Close the lock plate on the coupler.
- Move the spring-loaded lock plate locking pin to the CLOSED position. Be sure the locking pin is holding the lock plate.

## Coupling To The Tow Vehicle

- Be sure the coupler is all the way on the ball and the lock plate is engaged. A properly engaged locking mechanism will allow the coupler to raise the rear of the tow vehicle. Using the trailer jack, test to see that you can raise the rear of the tow vehicle by 1 inch.

### NOTICE

**The drop leg jack can be damaged by overloading. Do not use the drop leg jack to raise the tow vehicle more than 1 inch.**

**If the coupler cannot be secured to the ball, do not tow the trailer.** Call Lakota Trailers at 574-848-1636 or your dealer for assistance.

- After testing to see the coupler is properly secured and locked to the ball, retract the jack to its fully retracted position.
- Return the drop leg(s) to their upper positions. The drop leg(s) are held in the lowered position with a plunger pin. Rotating the plunger pin will cause it to come out of engagement with the drop leg and the leg will rapidly rise.

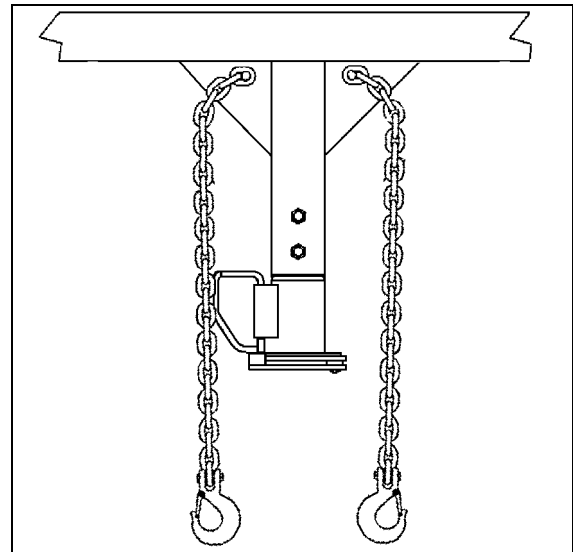
### ^ CAUTION

**The drop legs are heavily spring loaded in the lowered position. They will rapidly return to the upper position when released and can inflict serious bruises, scrapes or pinching.**

**Keep your feet, shins and hands well clear of the drop legs and drop leg bases when releasing the drop legs.**

#### 4.4.4 RIG THE SAFETY CHAINS

- Visually inspect the safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
  - Rig the safety chains so they attach to the “safety chain receivers” on the tow vehicle. If you are not certain of the hitch provisions for receiving safety chains, contact the hitch manufacturer or installer. Do NOT attach the safety chains to the gooseneck ball or its support; and
  - Rig the safety chains so they have sufficient slack to permit turning, but not too much slack – the safety chains must keep the gooseneck on the tow vehicle bed if the trailer uncouples. See figure 4-7.



*Figure 4-7 - Safety Chain Arrangement*

### ^ WARNING

**Improper rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury, if the trailer uncouples from the tow vehicle.**

- Fasten chains to safety chain receivers on the tow vehicle, not to ball.
- Have sufficient slack to permit turning and to keep gooseneck on bed of the tow vehicle, if the trailer comes loose.

#### 4.4.5 CONNECT THE 7-PIN CONNECTOR

Connect the trailer lights to the tow vehicle's electrical system using the 7-pin connector.

- Check **all** lights for proper operation. Repair if needed.
- Check electric brakes for proper operation using brake controller mounted in the cab.

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer on the road, you must operate the brake controller while trying to pull the trailer in order to confirm the electric brakes operate. While towing the trailer at less than 5 m.p.h., manually operate the electric brake controller in the tow vehicle cab. You should feel the operation of the trailer brakes.

## Coupling To The Tow Vehicle

### **^ WARNING**

Improper electrical connection between the tow vehicle and the trailer will result in inoperable lights and electric brakes, and can lead to collision.

Before each tow:

- Check that all lights and turn signals work.
- Check that the electric brakes work by operating the brake controller inside the tow vehicle.

#### **4.4.6 ATTACH AND TEST THE BREAKAWAY BRAKE SYSTEM**

If the coupler or hitch fails, a properly connected and working breakaway brake system will apply electric brakes on the trailer. The safety chains will keep the tow vehicle attached and as the brakes are applied at the trailer's axles, the trailer/tow vehicle combination will come to a controlled stop.

The trailer breakaway brake system includes a battery, a switch with a pullpin and lanyard, and a breakaway brake controller. Read and follow the instructions here, as well as the instructions that have been prepared by the breakaway brake controller manufacturer. If you do not have these instructions, call Lakota Trailers at 574-848-1636 for assistance.

The breakaway brake system battery will trickle charge from the tow vehicle. If the electrical system on your tow vehicle does not provide power to the breakaway brake battery, you must periodically charge the battery on the trailer to keep the breakaway brake system in working order. Do not tow trailer if the battery requires recharging. A discharged breakaway brake battery will not activate the brakes if the trailer uncouples from the tow vehicle. The battery must be fully charged before towing trailer.

- Visually inspect the breakaway brake system for broken parts.
- Connect the pullpin lanyard to the tow vehicle so the pullpin will be pulled out before all of the slack in the safety chains is taken up. See figure 4-8. Do **not** connect the pullpin lanyard to a safety chain, safety chain receiver or to the gooseneck ball or its support. This would keep the breakaway brake system from operating when it is needed. Contact the hitch manufacturer or installer if you are not certain of the hitch provisions for breakaway brake connection.

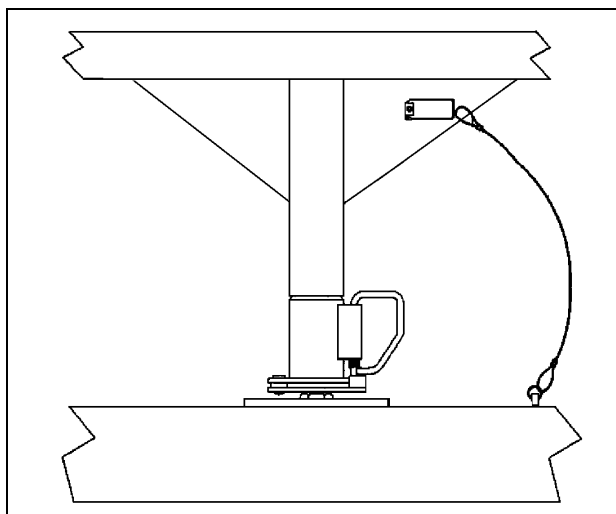


Figure 4-8 - Breakaway Brake Lanyard

- To check the breakaway brake battery, pull out the pullpin from the switch and attempt to pull the trailer forward. You should feel the trailer resisting being towed, but the wheels will not necessarily lock up.
- Immediately replace the pullpin. The breakaway brake system battery discharges rapidly when the pullpin is removed.

### **^ WARNING**

An ineffective or inoperative breakaway brake system can result in a runaway trailer leading to death or serious injury if the coupler or hitch fails.

Connect the breakaway lanyard to the tow vehicle; and **NOT** to the safety chain, safety chain receiver, gooseneck ball or gooseneck ball support.

Test the function of the breakaway brake system before towing the trailer. Do not tow the trailer if the breakaway brake system is not working. Have it serviced or repaired.

Do **not** tow the trailer with the breakaway brake system ON because the brakes will overheat which can result in permanent brake failure.

### **^ WARNING**

Failure to replace the pullpin can result in ineffective brakes, leading to loss of control, serious injury or death.

If you do not use your trailer for three or more months, or during winter months:

- Store the battery indoors; and

## Coupling To The Tow Vehicle

- Charge the battery every three months.

Replace the breakaway brake battery at intervals recommended by the battery manufacturer's instructions.

Raise the tow vehicle tailgate.

### 4.4.7 UNCOUPLING THE GOOSENECK TRAILER

- Park the trailer on a firm level surface.
- Block trailer tires to prevent the trailer from rolling, before jacking the trailer up.
- Lower the tow vehicle tailgate.
- Disconnect the electrical connector.
- Disconnect the breakaway brake switch lanyard.
- Disconnect the safety chains from the tow vehicle.
- Move the spring-loaded coupler lock plate locking pin to the OPEN position.
- Rotate the lock plate to a position that permits the gooseneck ball to exit the coupler.
- Before activating jack, make certain ground surface below jack base will support the trailer.
- Hand crank jack or activate hydraulic or electric jack.
- Push down on the drop leg base with your foot to place a drop leg to the desired lowered position.
- Rotate the plunger pin handle so the plunger pin is attempting to engage the drop leg.
- Slowly raise your foot, permitting the drop leg to rise. The plunger pin will engage a hole in the drop leg.

### **CAUTION**

**The drop legs are heavily spring loaded in the lowered position. They will rapidly return to the upper position when released and can inflict serious bruises, scrapes or pinching.**

**Keep your feet, shins and hands well clear of the drop legs and drop leg bases when releasing the drop legs.**

**Always wear shoes or boots while performing this operation.**

- Be sure the plunger pin is fully engaged. Push it in by hand if necessary.
- If your trailer has two drop leg jacks, lower them both to the same level, following the above instructions.
- If your trailer is equipped with electrically powered legs, see the accessories section for operation.

### **NOTICE**

**If the drop legs are not set at the same level, one of the drop leg jacks can be overloaded and can be damaged.**

- Release the handle (or crank) from its holder and engage it with the jack shaft.
- Rotate the handle (or crank) clockwise to slowly extend the jack and transfer the weight of the trailer tongue to the jack.
- On two speed jacks, move the handle to engage high speed mode.
- When the drop leg base contacts the ground, shift the gearbox into low speed mode.

### **NOTICE**

**Do not use high speed to lift the trailer, the drop leg jack mechanism can be damaged.**

**High speed is used only to rapidly move the drop leg base into contact with the ground.**

- Continue to extend the jack(s), making sure the ground is providing stable and level support for the trailer.
- After the jack(s) are extended and the coupler is well clear of the gooseneck ball, to permit driving the tow vehicle away, disengage the handle from its shaft and return to its holder.

### 4.5 ADJUST GOOSENECK COUPLER HEIGHT

The height of the coupler on the trailer must be adjusted so the trailer, when loaded to rated capacity, is level while connected to the tow vehicle. A level trailer allows equal weight distribution on the axles. There must also be adequate clearance between the bottom of the trailer and the sides of the tow vehicle bed.

Connect trailer to tow vehicle (see Coupling To The Tow Vehicle) and load the trailer to rated capacity. Park the tow vehicle and trailer on a firm level surface.

Stand back from the trailer and visually verify if the trailer is level front-to-rear. If the front of the trailer is higher than the rear, the hitch must be retracted. If the front of the trailer is lower than the rear, the hitch must be extended.

- Uncouple trailer from tow vehicle (See Coupling To The Tow Vehicle).



## Coupling To The Tow Vehicle

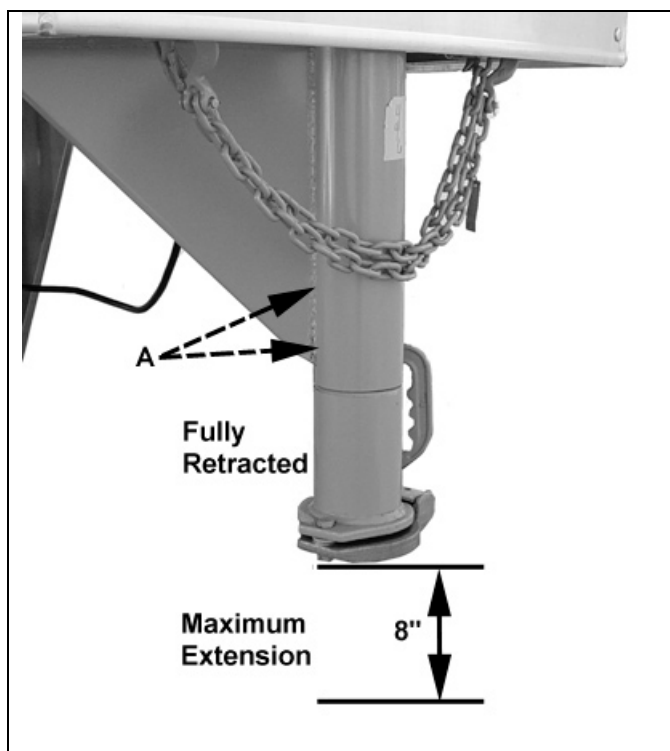


Figure 4-9 - Gooseneck Coupler Height Adjustment

- Loosen the jam nuts and set screws (A). See figure 4-9.
- Extend or retract the coupler as needed. The maximum the receiver can be extended from the fully retracted position is 8 inches.
- Tighten set screws (A) to 75-100 lb/ft of torque. Tighten jam nuts to 80-90 lb/ft of torque.

### **^ WARNING**

**Improper gooseneck height adjustment can result in overloaded tires, blowout and loss of control, leading to death or serious injury.**

**Adjust the gooseneck coupler so the loaded trailer is level.**

## **4.6 CHECKING TRAILER TONGUE WEIGHT**

It is critical to have a portion of the trailer load carried by the tow vehicle. That is, the trailer tongue must exert a downward force on the hitch. This is necessary for two reasons. First, the proper amount of tongue weight is necessary for the tow vehicle to be able to maintain control of the tow vehicle/trailer system. If, for example, the tongue exerts an upward pull on the hitch, instead of pushing down on it (because the trailer is overloaded behind its axles), the rear wheel of the tow vehicle can lose traction or grip and cause loss of control. Also, even if there is some weight on the tongue, but not enough weight on the tongue, the trailer can become unstable at high speeds.

Remember, the faster you go the more likely the trailer is to sway.

If, on the other hand, there is too much tongue weight, the tow vehicle is prone to jack-knife. Furthermore, the front wheels of the tow vehicle can be too lightly loaded and cause loss of steering control and traction, if the front wheels are driving.

In addition to tow vehicle control, tongue weight is necessary to insure the trailer axle(s) do not exceed their Gross Axle Weight Rating (GAWR).

The following table has “rules of thumb” for proper tongue weight.

In the table below, the second column notes the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Vehicle Weight, or “GVW”) that should appear on the tongue of the trailer. For example, a trailer with a gooseneck hitch, with a loaded weight of 12,000 pounds, should have 20-25% of 12,000 pounds on the tongue. That is, the example trailer would have 2,400 to 3,000 pounds on its tongue.

Tongue Weight as a Percentage of Loaded Trailer Weight	
Type of Trailer	Percentage
Tagalong	10–15% for large trailers
	6-10% for smaller trailers
Gooseneck	20–25%

### **^ WARNING**

**Improper tongue weight (load distribution) can result in loss of control of the trailer, leading to death or serious injury.**

**Make certain tongue weight is within the allowable range.**

**Be sure to:**

- **Distribute the load front-to-rear to provide proper tongue weight (see chart);**
- **Distribute the load evenly, right and left, to avoid tire overload; and**
- **Keep the center of gravity low.**

The best method of weighing your trailer is to go to a truck stop where there is a “certified” scale. Pull the tow vehicle only onto the scale and get the weight. This weight must be less than your tow vehicle’s GVWR. Pull the trailer onto the scale and decouple it from the tow vehicle, leaving just

## Coupling To The Tow Vehicle

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the trailer on the scale. Get a “ticket”, which lists the total trailer weight. Re-connect the trailer to your tow vehicle and the drive the tow vehicle wheels off the scale, just leaving the trailer axles on the scale. Get a second “ticket”, which lists the trailer’s axle weight. Simply subtract the axle weight from the total weight to determine the tongue weight. While you are at the scale, you should weigh the entire combination vehicle. This result should be less than the

Gross Combined Weight Rating (GCWR) for your towing vehicle. Some scales allow you to get individual axle weight also. If this is possible, get the tow vehicles front and rear axle weights to make sure they are in the same proportion as the tow vehicle alone, and the rear axle is not overloaded.



## 5 LOADING THE TRAILER

Improper trailer loading causes many accidents and deaths. To safely load a trailer, you must consider:

- Overall load weight;
- Load weight distribution;
- Proper tongue weight; and
- Securing the load properly.

To determine you have loaded the trailer within its rating, you must consider the *distribution* of weight, as well as the total weight of the trailer and its contents. The trailer axles carry most of the total weight of the trailer and its contents. The remainder of the total weight is carried by the tow vehicle hitch. It is essential for safe towing that the trailer tongue and tow vehicle hitch carry the proper amount of the loaded trailer weight, otherwise the trailer can develop an undesirable sway at towing speeds, or the rear of the towing vehicle can be overloaded. Read the “Checking Trailer Tongue Weight” section.

The load distribution must be such that no component part of the trailer is loaded beyond its rating. This means you must consider the rating of the tires, wheels and axles. For tandem and triple axel trailers, you must make sure the front-to-rear load distribution does not result in overloading any axle.

Towing stability also depends on keeping the center of gravity as low as possible. Load heavy items on the floor and over the axles. When loading additional items, be sure to maintain even side-to-side weight distribution and proper tongue weight. The total weight of the trailer and its contents must never exceed the total weight rating of the trailer (Gross Vehicle Weight Rating, or “GVWR”).

### **^ WARNING**

**An overloaded trailer can result in loss of control of the trailer, leading to death or serious injury.**

**Do not exceed the trailer Gross Vehicle Weight Rating (GVWR) or an axle Gross Axle Weight Rating (GAWR).**

**Do not load a trailer so the weight on any tire exceeds its rating.**

### 5.1 LOADING HORSES

Couple the trailer to the tow vehicle before loading. This is essential for the tagalong trailer because the tongue can rise during loading, before the cargo is properly distributed.

Do not transport people, loose livestock, containers of hazardous substances, or containers of flammable substances.

### **^ WARNING**

**Never transport people inside a trailer. Besides putting their lives at risk, the transport of people may be illegal.**

### **^ WARNING**

**Do not carry “loose” livestock in your horse trailer. They can cause the trailer to become unstable and can result in loss of control.**

**You must use a trailer designed to carry “loose” livestock.**

#### 5.1.1 PREPARING THE HORSE TRAILER FOR LOADING

- Before loading a horse in your trailer, inspect the interior of the trailer. The interior of the trailer must be smooth, and have no protruding objects. There should be no loose objects that could move about and startle or injure the horse. Check the walls, floor, dividers, etc., for loose and broken parts, welds, hinges, etc.
- Open windows and vents to provide ventilation. Consider the weather and transport conditions (i.e. on warm sunny days, maximum ventilation is required). Do not carry a horse without providing ventilation, even in coldest weather. Ventilation is critical for the well being of your horses. Know your horses and adjust ventilation for your horses’ comfort.
- Be sure pivoting latches are in a flush position, so they do not present a protrusion that can injure your horse.
- Remove or secure loose objects, (i.e. butt bars, saddles, tack and equipment).
- Inspect for cracks at the welds on the divider hinges, and the welds on the tie rings. If you are able to open any cracks in or near these welds by lifting the dividers or by twisting the tie rings, have the weld repaired before loading your horses.

## Loading And Unloading Trailer

### **^ CAUTION**

The trailer interior may contain hazards to a horse that can result in its serious injury or death.

Before loading a horse, inspect the trailer interior and adjust or repair all loose and protruding features such as handles, loose or broken parts of the trailer, etc.

Before towing trailer:

- Lock all stall dividers.
- Be sure all saddles, tack and equipment, as well as horse(s), are prevented from being thrown about.

### **^ WARNING**

Improper weld repair will lead to early failure of the trailer structure and can cause serious injury or death.

Do not repair cracked or broken welds unless you have the skills and equipment to make a proper repair. Have the welds repaired by your dealer.

### **5.1.2 LOADING THE HORSE TRAILER**

The trailering of horses introduces many variables not present in the trailering of non-living cargo. Horses are prone to take flight when they feel threatened or pain. In the confines of a trailer, the flight response can cause serious injury or death to a human handler. Even experienced and docile horses can be frightened.

Horses must be slowly acclimated to trailering. Be sure the horse's first trips are short trips, so you can gauge its reaction. Some will take to the experience easily, but others will strongly protest. You must act according to your horse's demeanor.

### **^ WARNING**

When a horse is frightened, it is capable of inflicting serious injury or death to a human handler.

Know your horse's temperament before attempting to trailer it.

Handling a horse not trailer-acclimated may result in injury or death, or damage to your trailer.

Do not haul an unbroken horse in this trailer.

Horses must have a halter.

- Open the doors and/or loading ramp as needed. See figure 5-1. Fasten doors against the side of the trailer using the door holdbacks.



*Figure 5-1 – Rear Doors and Ramp Open*

- Open all stall dividers and lock them in their OPEN position.
- If the trailer has a tack room, changing room or living quarters, close and lock the door between the room and the horse area.
- Lead the horse into the trailer by a halter or lead rope. If the horse shows any signs of distress, stop loading, and calm the horse.

### **^ WARNING**

Improper weight distribution of the horses in the trailer will result in an unstable trailer.

Always load the first horse into the forward-most stall.

## Loading And Unloading Trailer

- Tie the horse to the trailer interior by fastening the lead rope to the tie ring. A rule of thumb is to leave about 18 inches of free rope between the attachment point on the trailer and the horse. The layout of the horse trailer has been designed to safely contain your horse. Restraining a horse without using a combination of a tie-strap and stall divider may result in serious injury or death to the horse.

### **^ CAUTION**

**Failure to secure a horse using a tie strap may result in its serious injury or death.**

- Close and lock the stall divider. See figure 5-2.



*Figure 5-2 – Slant Load Stall Divider Closed and Locked*

- If additional horses are to be loaded, repeat previous steps for each horse – lead the horse, secure the horse, close and lock the stall divider.
- After the last horse has been loaded, lock any unused dividers in the CLOSED (across the trailer) position.
- Double check to ensure each horse is tied to the trailer and each stall divider is LOCKED in the CLOSED position.
- Raise the drop ramp if equipped. Release the door holdbacks and swing the hinged doors to a closed position.
- Secure the trailer doors so the door cannot open while the trailer is being towed.
- If your trailer is fitted with feed doors, close and secure them.

### **^ WARNING**

**If the door opens, your cargo may be ejected onto the road, resulting in death or serious injury to other drivers.**

**Always secure the door latch after closing. Place a linchpin in the catch.**

- Check the horses after 5 to 10 miles or 10 minutes of towing, and then at least once per hour thereafter. Open a feed door or other access and look for signs of stress, cuts, or injury. On long trips it is recommended horses be removed from the trailer every 6-10 hours for exercise, food and watering.

### **^ WARNING**

**Horses may kick when back door is opened.**

**Stay clear when opening back door.**

## 6 CHECKING THE TRAILER BEFORE AND DURING EACH TOW

### 6.1 PRE-TOW CHECKLIST

Before towing, double-check all of these items:

- Tires, wheels and lug nut torque. See the “Major Hazards” in the Safety section of this manual.
- Tire Pressure. Inflate tires on trailer and tow vehicle to the pressure stated on the respective Certification/VIN label.
- Coupler secured and locked. See the “Coupling To The Tow Vehicle” section of this manual.
- Safety chains properly rigged and attached to tow vehicle, not to hitch or ball. See the “Coupling to the Tow Vehicle” section of this manual.
- Verify all trailer lights work.
- Test trailer brakes.
- Safety breakaway switch lanyard fastened to tow vehicle, not to safety chains. See the “Coupling to the Tow Vehicle” section of this manual.
- Cargo properly loaded, balanced and secured. See the “Loading The Trailer” section of this manual.
- Tongue weight checked.
- Doors and gates latched and secured.
- Verify all safety lock pins are properly installed on ramps, doors and pins.
- Fire extinguisher.
- Flares and reflectors.
- If equipped with a living quarters, engage locks on exhaust hood vent.

### 6.2 MAKE REGULAR STOPS

After each 50 miles, or one hour of towing, stop and check the following items:

- Coupler secured.
- Safety chains are fastened and not dragging.
- Cargo secured.
- Cargo door latched and secured.

## 7 BREAKING-IN A NEW TRAILER

### 7.1 RETIGHTEN LUG NUTS AT FIRST 10, 25 & 50 MILES

Wheel lugs can shift and settle quickly after being first assembled, and must be tightened to proper torque after the **first** 10, 25 and 50 miles of driving. Failure to perform this may result in a wheel coming loose from the trailer, causing a crash leading to death or serious injury. See Section 9 for lug nut tightening sequence and torque value.

#### **^ WARNING**

**Lug nuts are prone to loosen after being first assembled. Death or serious injury can result.**

**Tighten lug nuts to proper torque on a new trailer, and after re-mounting a wheel at 10, 25 and 50 miles.**

### 7.2 ADJUST BRAKE SHOES AT FIRST 200 MILES

Brake shoes and drums experience a rapid initial wear. The brakes must be adjusted after the first 200 miles of use, and each 3,000 miles thereafter. Some axles are fitted with a mechanism that will automatically adjust the brake shoes when the trailer is “hard braked” from a rearward direction. Read your axle and brake manual to see if your brakes adjust automatically. If you do not have the axle and brake manual, call Lakota Trailers at 574-848-1636 for assistance.

A hard stop is used to:

- Confirm the brakes work;
- Confirm the trailer brakes are properly synchronized with the tow vehicle brakes using the brake controller in the tow vehicle;
- Adjust the brake shoes as necessary.

If your trailer is not fitted with automatically adjusting brakes, the brakes will need to be manually adjusted. See section 9.2.4.2, “Manually Adjusting Brake Shoes,” for instructions.

### 7.3 SYNCHRONIZING THE BRAKE SYSTEMS

Trailer brakes are designed to work in synchronization with the brakes on the tow vehicle.

When the tow vehicle and trailer braking systems are synchronized, both braking systems contribute to slowing, and the tongue of the trailer will neither dive nor rise sharply.

#### **^ WARNING**

**If trailer and tow vehicle brakes do not work properly together, death or serious injury can occur.**

**Road test the brakes in a safe area at no more than 30 m.p.h. before each tow**

To insure safe brake performance and synchronization, read and follow the axle/brake and the brake controller manufacturers’ instructions. If you do not have these instructions, call Lakota Trailers at 574-848-1636 for assistance.

### 7.4 TIRE PRESSURE

Check tire pressures on both the trailer and tow vehicle. Inflate to the pressure stated on the respective Certification/VIN label for that vehicle.

## 8 ACCESSORIES

This chapter provides some basic information for the safe operation of several accessories. For many accessories, the manufacturer of the accessory has also provided instructions. You must read and follow these instructions before using the accessory. If you do not have the instructions, call before operating the accessory. The following accessories are described in this section:

- 
- Electric/Hydraulic Jacks
- Stall Dividers
- Drop Down Feed Doors
- Egress Window
- Saddle Rack
- Load Lights

### 8.1 ELECTRIC/HYDRAULIC JACKS

Your gooseneck trailer may be equipped with electrically powered hydraulic jacks. A 12 volt electric motor powers a hydraulic pump that operates the jacks.

#### 8.1.1 ELECTRIC OPERATION

The jack control is located under the trailer gooseneck. The jack control is shown in figure 8-3.

Open the cover and turn the key switch to ON. Simultaneously move the driver's side (B) and passenger side (C) switches to the EXTEND position, to evenly raise trailer, or move to RETRACT to lower trailer. Turn key switch to OFF. Verify both jacks are touching the surface or they are both fully retracted. Remove key while not in use.

#### **NOTICE**

**Supporting a trailer with only one jack may result in trailer damage.**

**Verify both jacks are touching the surface and supporting the trailer.**

**When retracting, verify both jacks are fully retracted.**



*Figure 8-3 – Electric Landing Gear Control*

### 8.2 STALL DIVIDERS

Your trailer may be equipped with stall dividers that can be removed or repositioned to accommodate various horses.

To remove the stall dividers:

Remove pin (A) from divider post and remove divider. See figure 8-4.

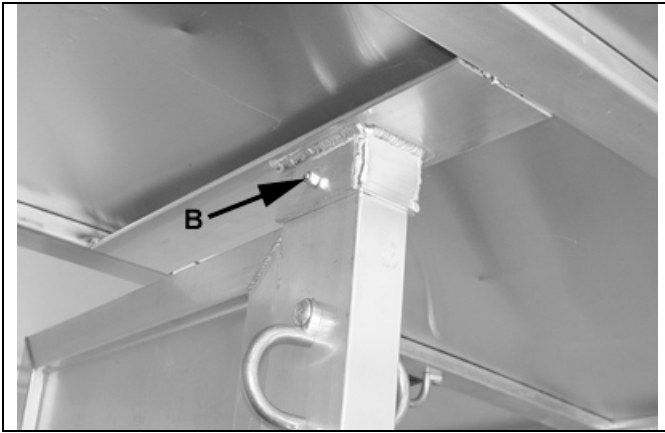


*Figure 8-4 – Remove Stall Divider Panels*

Remove nut (B) and cap screw on stall divider post. Move top of post forward, out of the channel to remove. See figure 8-5.



## Accessories



*Figure 8-5 – Nut On Divider Post*

### **8.3 DROP DOWN FEED DOORS**

The drop down feed doors are made with a sliding window and can be equipped with an optional drop down safety grill.

The drop down safety grill makes traveling in high temperatures more moderate, allowing ample air flow through the trailer. Do not attach or tie animals, feed equipment or tack directly to the grill.

Open the drop down feed door by turning the latch (A). Pull door down to expose the optional safety grill. See figure 8-6.



*Figure 8-6 – Drop Down Feed Door*

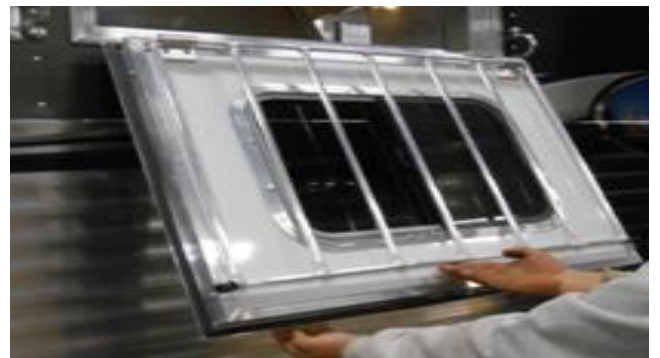
The safety grill can also be opened down to allow feeding or total head exposure while parked. Move the spring loaded tube (B) downward to open grill. See figure 8-7.



*Figure 8-7 – Open Safety Grill*



*Figure 8-8 – Open Safety Grill*



*Figure 8-9 – Safety Grill Fully Open*

Never leave the safety grill down or open while traveling. Return the safety grill back to closed position and engage latch.



## Accessories

### **^ CAUTION**

Feed door may not latch correctly if "thrown" shut. Door may bounce back, causing serious injury.

Be certain feed door is securely latched when closing.

Close the drop down feed door by swinging the door back up into the opening and engaging latch.

**Always** keep one hand in contact with feed door while closing. Check the paddle of the door latch after shutting the door to insure it is not loose. A paddle that can be jiggled is an indication the latch is not fully engaged in the striker.

### **8.4 EGRESS WINDOW**

One or more windows installed over the gooseneck are egress style windows that can be opened and used as an exit in an emergency. Pull out on the red latch (A) and push out on the bottom of the window to open. See figure 8-8.



*Figure 8-8 – Egress Window Latches*

### **8.5 ADJUSTABLE SADDLE RACK**

To adjust saddle rack, loosen knob (A) and move rack as desired. Tighten knob to prevent movement. See figure 8-10.



*Figure 8-9 – Saddle Rack*



*Figure 8-10 – Adjust Saddle Rack*

To remove saddle rack, remove all saddles from rack, disengage top pin (B) and remove rack. See figure 8-11.



*Figure 8-11 – Remove Saddle Rack*

### **8.6 LOAD LIGHTS**

Your trailer may be equipped with interior and exterior load lights. The switches (A) for these lights will be located on the driver's side rear of the trailer.



*Figure 8-12 – Load Light Switches*

### **8.7 HAYRACK**

Your trailer may be equipped with a hayrack. The maximum weight capacity is 600 pounds fully loaded.

#### **^ WARNING**

DO NOT WALK ON ROOF WHEN LOADING OR UNLOADING MATERIAL FROM RACK.

## 9 INSPECTION, SERVICE & MAINTENANCE

### 9.1 INSPECTION, SERVICE & MAINTENANCE SUMMARY CHARTS

You must inspect, maintain and service your trailer regularly to insure safe and reliable operation. If you cannot or are unsure how to perform the items listed here, have your dealer do them. Note: In addition to this manual, also check the relevant component manufacturer's manual.

Inspection and Service before Each Use		
Item	Inspection / Service	Manual Section Reference
Breakaway Brakes > Electric	Check operation	Sections 4.3.5 & 4.4.5
Breakaway Battery	Fully charged, connections clean	Sections 4.3.5 & 4.4.5
Brakes, all types	Check operation	Section 7.3
Shoes and Drums	Adjust	Section 7.2 & 9.2.4.2
Brakes, Hydraulic – Vacuum, Air or Electric Actuated	Check gauge for proper vacuum of 18 In. Hg. (inches of mercury)	Section 9.2.4.6
Coupler and Hitch Ball	Check for cracks, pits, and flats. Replace w/ball & coupler having the same trailer GVW Rating.	Section 4.3.1
	Grease.	Section 4.3.2
	Check locking device & replace when worn.	Section 4.3.2 & 9.2.5.1
Gooseneck Ball	Check for cracks, pits, and flats. Replace w/ball & coupler having the same trailer GVW Rating.	Section 4.4.2
	Grease.	Section 4.4.2
	Check locking device & replace when worn.	Section 4.4.2 & 9.2.5.2
Safety Chains & Hooks	Check for wear and damage	Sections 4.3.3 & 4.4.4
Tires	Check tire pressure when cold. Inflate as needed.	Sections 7.4 & 9.2.8
Wheels – Lug Nuts (Bolts) & Hub	Check for tightness	Section 1.1
	Tighten. For new and remounted wheels, check torque after first 10, 25 & 50 miles of driving and after any impact	Sections 1.1 & 9.2.11

Inspection and Service each 3 Months or 3,000 Miles		
Item	Inspection / Service	Manual Section Reference
Structure		
> Trailer and floor	Wash trailer and floor	Section 9.2.2
> Hinges, doors and dividers	Inspect. Repair or replace damaged, worn or broken parts	Sections 9.2.2

## Inspection, Service & Maintenance

Inspection and Service each 6 Months or 6,000 Miles		
Item	Inspection / Service	Manual Section Reference
Tires	Rotate @ 5,000 miles	
Brakes, electric		
> Magnets	Check wear and current draw	Section 9.2.4.5
> Controller (in tow vehicle)	Check power output (amperage) and modulation	Section 9.2.4.4 See Controller Mfr's Manual
Tires	Inspect tread and sidewalls thoroughly.  Replace tire when treads are worn, when sidewall has a cut or bulge, or sidewall is worn	Section 9.2.8  Section 9.2.8

Inspection and Service Each Year or 12,000 Miles		
Item	Inspection / Service	Manual Section Reference
Brakes, all types	Check for scoring and wear. Replace per manufacturer's specifications	Section 9.2.4.1
> Shoes and drums		See Brake Mfr's Manual
Jack	Lubricate	Section 9.2.3
Structure	Inspect all frame members, bolts & rivets. Repair or replace damaged, worn or broken parts.	Section 9.2.1
> Frame members		
> Welds	Inspect all welds. Repair as needed	Section 9.2.2.2
Wheels	Check and confirm free running. Replace if not.	Section 9.2.10
> Wheel Bearings	Disassemble / inspect / assemble and repack. Replace promptly if immersed in water	See Axle Mfr's Manual
> Rims	Inspect for cracks & dents. Replace as needed.	Section 9.2.9
Structure		
> Axle Attachment Bolts	Check BY DEALER	Section 9.2.1

## 9.2 INSPECTION AND SERVICE INSTRUCTIONS

### 9.2.1 AXLE BOLTS, FRAME, SUSPENSION & STRUCTURE

#### **^ WARNING**

Worn or broken suspension parts can cause loss of control and injury may result.

Have trailer professionally inspected annually and after any impact.

To perform many of the inspection and maintenance activities, you must jack up the trailer.

When jacking and using jack stands, place them so as to clear wiring, brake lines, and suspension parts (springs,

torsion bars, etc.). Place jacks and jack stands under the outer frame rail to which the axles are attached.

#### **^ WARNING**

Never crawl under your trailer unless it is on firm and level ground and resting on properly placed and secured jack stands.

#### **^ WARNING**

Crushing hazard.

The tow vehicle and trailer could be inadvertently moved while a person is under the trailer.

The tow vehicle engine must be off, ignition key removed and parking brakes set before entering the area under the trailer.

## Inspection, Service & Maintenance

### 9.2.2 TRAILER STRUCTURE

Because the trailer floor is subjected to urine and manure, it will need to be cleaned more often than any other part of the structure.

Remove the floor mat and wash the interior floor and both sides of the mat using a power washer and a detergent solution. Wash and rinse the walls, and the entire exterior of the trailer.

#### 9.2.2.1 FASTENERS AND FRAME MEMBERS

Inspect all of the fasteners and structural frame members for bending and other damage, cracks, or failure. Repair or replace any damaged fastener and repair the frame member. If you have any questions about the condition or method of repair of fasteners or frame members, get the recommendation of, or have the repair done by your dealer.

#### **^ WARNING**

**Broken or damaged fasteners or welds can cause injury or damage to trailer and contents.**

**Inspect for, and repair all damaged parts at least once a year.**

#### 9.2.2.2 WELDS

All welds can crack or fail when subjected to heavy loads or movement of cargo that was not properly tied to prevent movement. Any time you know or suspect the trailer has been subjected to heavy loads or movement of cargo, immediately inspect the welds and fasteners for damage. To prevent severe damage to your trailer, inspect all of the welds for cracks or failure at least once a year.

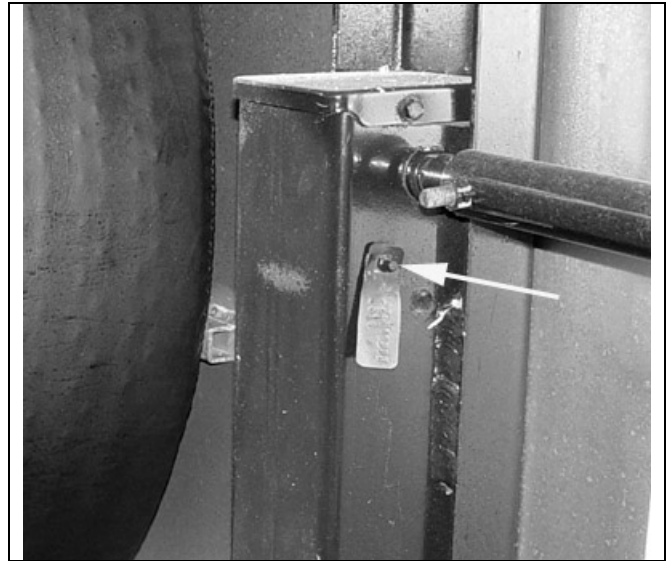
#### **^ WARNING**

**Broken or damaged fasteners or welds can cause injury or damage to trailer and contents.**

**Inspect for, and repair all damaged parts at least once a year.**

### 9.2.3 LUBRICATION POINTS

If a grease fitting is present, you must use a grease gun to lubricate the jack mechanism. Grease the gears in the top of hand-cranked jacks once a year, by removing the top of the jack and pumping or hand packing grease into the gears. Some trailers will have a grease fitting on the jack shaft. Pump grease into the fitting every month. See figure 9-1.



*Figure 9-1 - Lubricate Jack*

### 9.2.4 TRAILER BRAKES

#### 9.2.4.1 BRAKE SHOES AND DRUMS

Properly functioning brake shoes and drums are essential to ensure safety. You must have your dealer inspect these components at least once per year, or each 12,000 miles.

The brake shoes must be adjusted after the first 200 miles of use, and each 3,000 miles thereafter. Most axles are fitted with a brake mechanism that will automatically adjust the brake shoes when the trailer is "hard braked" from a rearward direction. Read your axle and brake manual to see how to adjust your brakes. If you do not have this manual, call Lakota Trailers at 575-848-1636 for assistance.

#### 9.2.4.2 MANUALLY ADJUSTING BRAKE SHOES

Some braking systems are not automatically adjusted by hard stopping. These brakes require manual adjustment. The following steps apply to adjust most manually adjustable brakes. Read your axle and brake manual to see how to adjust your brakes. If you do not have this manual, call Lakota Trailers at 574-848-1636 for assistance.

#### **^ WARNING**

**Crushing hazard.**

**The tow vehicle and trailer could be inadvertently moved while a person is under the trailer.**

**The tow vehicle engine must be off, ignition key removed and parking brakes set before entering the area under the trailer.**

- Jack up the trailer and secure it on adequate capacity jack stands.
- Be sure the wheel and brake drum rotate freely.

## Inspection, Service & Maintenance

- Remove the adjusting-hole cover from the adjusting slot on the bottom of the brake backing plate.
- With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn. Note: Your trailer maybe equipped with drop spindle axles. See axle manual for your axle type. You will need a modified adjusting tool for adjusting the brakes in these axles. With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.
- Rotate the starwheel in the opposite direction until the wheel turns freely with a slight drag.
- Replace the adjusting-hole cover.
- Repeat the above procedure on all brakes.
- Lower the trailer to the ground.

### 9.2.4.3 BRAKES, ELECTRIC

Two different types of electric brakes may be present on the trailer: an emergency electric breakaway system, which acts only if the trailer comes loose from the hitch and the breakaway pin is pulled. The other brake is an electric braking system that acts whenever the brakes of the tow vehicle are applied.

**Breakaway Battery** - This battery supplies the power to operate the trailer brakes if the trailer uncouples from the tow vehicle. Be sure to check, maintain and replace the battery according to the battery manufacturer' instructions.

**Breakaway Switch** - This switch causes the breakaway battery to operate the electric brakes if the trailer uncouples from the tow vehicle.

The pull cable for the pull pin is connected to the tow vehicle, and the switch is connected to the trailer. To check for proper functioning of the switch, battery and brakes, you must pull the pin from the switch and confirm the brakes apply to each wheel. You can do this by trying to pull the trailer with the tow vehicle, after pulling the pin. The trailer brakes may not lock, but you will notice a greater force is needed to pull the trailer.

### **^ WARNING**

**If electric breakaway brakes do not operate when trailer is uncoupled from the tow vehicle, death or serious injury can occur.**

**Check emergency breakaway brake system BEFORE each tow.**

### 9.2.4.4 TOW VEHICLE OPERATED ELECTRIC BRAKES

The electric brakes that operate in conjunction with the tow vehicle brakes must be "synchronized" so braking is properly distributed to the tow vehicle brakes and the trailer

brakes. For proper operation and synchronization, read and follow the axle/brake and the brake controller manufacturers' instructions. If you do not have these instructions, call for assistance.

### 9.2.4.5 MAGNETS FOR ALL ELECTRIC BRAKES

To make certain an electrically-operated braking system will function properly, you must have your dealer inspect the magnets at least once a year, or each 12,000 miles. See the brake manual for wear and current inspection instructions.

### 9.2.5 TRAILER CONNECTION TO TOW VEHICLE

#### 9.2.5.1 TAGALONG COUPLER AND BALL

Before each tow, coat the ball with a thin layer of automotive bearing grease to reduce wear and ensure proper operation; and check the locking device that secures the coupler to the ball for proper operation.

See the coupler manufacturer's manual for other inspections and maintenance. If you do not have this manual, call Lakota Trailers at 574-848-1636 for assistance.

If you see or feel evidence of wear, such as flat spots, deformations, pitting or corrosion, on the ball or coupler, immediately have your dealer inspect them to determine the proper action to prevent possible failure of the ball and coupler system. All bent or broken coupler parts must be replaced before towing the trailer.

The coupler handle lever must be able to rotate freely and automatically snap into the latched position. Oil the pivot points, sliding surfaces, and spring ends with SAE 30W motor oil. Keep the ball pocket and latch mechanism clean. Dirt or contamination can prevent proper operation of the latching mechanism.

When replacing a ball, the load rating must match or exceed the GVWR of the trailer.

#### 9.2.5.2 GOOSENECK COUPLER AND BALL

Before each tow, coat the ball with a thin layer of automotive bearing grease to reduce wear and ensure proper operation; and check the locking device that secures the coupler to the ball for proper operation.

See the gooseneck ball coupler manufacturer's manual for other inspection and maintenance activities. If you do not have a manual for the coupler, call Lakota Trailers at 574-848-1636 for assistance.

If you see or can feel evidence of wear, such as flat spots, pitting or corrosion, on the ball or coupler, immediately have your dealer inspect them to determine the proper action to prevent possible failure of the ball and coupler system.



## Inspection, Service & Maintenance

When replacing a ball, the load rating must match or exceed the GVWR of the trailer.

### 9.2.6 LIGHTS AND SIGNALS

Before each tow, check the trailer taillights, stoplights, turn signals and any clearance lights for proper operation.

#### **^ WARNING**

**To avoid collisions, taillights, stoplights and turn signals must work.**

### 9.2.7 ACCESSORY BATTERY

Your trailer may be outfitted with an accessory battery that operates lighting, electric jack, slide-outs or other accessories. An accessory battery may be kept charged either by the tow vehicle, generator, shore power or by an auxiliary battery charger.

A disconnect switch may be provided to disconnect the accessory battery when you do not plan to be using the trailer for an extended period, such as seasonal storage. If there is no disconnect switch, then remove the cables from the battery terminals.

The accessory battery must be kept in a charged condition during storage. The battery could freeze and break if it becomes discharged.

### 9.2.8 TIRES

Before each tow, be sure the tire pressure is at the value indicated on the Certification / VIN label. Tire pressure must be checked while the tire is cold. Do not check the tire pressure immediately after towing the trailer. Allow at least three hours for a tire to cool, if the trailer has been towed for as much as one mile. Replace the tire before towing the trailer if the tire treads have less than 2/32 inch depth or the telltale bands are visible.

A bubble, cut or bulge in a side wall can result in a tire blowout. Inspect both side walls of each tire for any bubble, cut or bulge; and replace a damaged tire before towing the trailer.

#### **^ WARNING**

**Worn, damaged or under-inflated tires can cause loss of control, injury and damage.**

**Check tires before each tow.**

### 9.2.9 WHEEL RIMS

If the trailer has been struck, or impacted, on or near the wheels, or if the trailer has struck a curb, inspect the rims for damage (i.e. being out of round); and replace any

damaged wheel. Inspect the wheels for damage every year, even if no obvious impact has occurred.

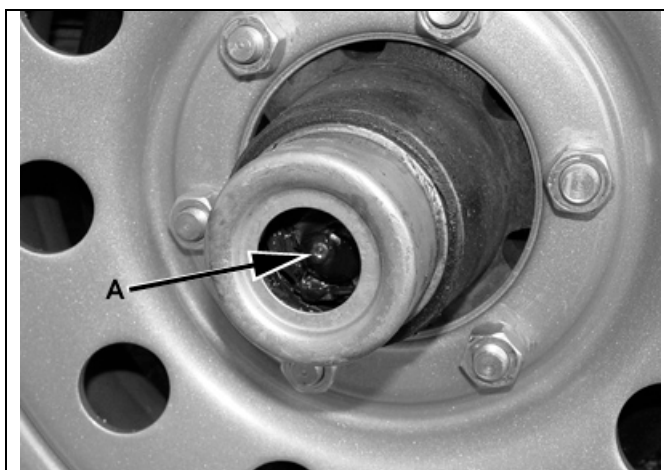
### 9.2.10 WHEEL BEARINGS

A loose, worn or damaged wheel bearing is the most common cause of brakes that grab.

To check your bearings, jack trailer and check wheels for side-to-side looseness. If the wheels are loose, or spin with a wobble, the bearings must be serviced or replaced.

To lubricate the wheel bearings:

- Remove hub cover.
- Remove rubber plug from the hub end.
- Place a standard grease gun onto the grease fitting (A). Make sure the grease gun nozzle is fully seated on the fitting.
- Pump grease into the fitting while rotating the hub. The old displaced grease will begin to flow back out to the cap around the grease gun nozzle.
- Stop when new grease is observed.
- Wipe off excess and install rubber plug and hub cover.



*Figure 9-2 – Lubricate Wheel Bearings*

Refer to the axle manufacturer's manual provided with your trailer for operation and maintenance information. If you do not have this manual, call for assistance.

### 9.2.11 LUG NUTS (BOLTS)

Lug nuts are prone to loosen right after a wheel is mounted to a hub. When driving on a remounted wheel, check to see if the lug nuts are tight after the first 10, 25 and 50 miles of driving and before each tow thereafter.

#### **^ WARNING**

**Lug nuts are prone to loosen after being first assembled. Death or serious injury can result.**

**Check lug nuts for tightness on a new trailer, and after re-mounting a wheel at 10, 25 and 50 miles.**



## Inspection, Service & Maintenance

### **^ WARNING**

**Metal creep between the wheel rim and lug nuts (bolts) will cause rim to loosen.**

**Death or injury can occur if wheel comes off.**

**Tighten lug nuts (bolts) before each tow.**

Tighten the lug nuts to the proper tightness to prevent wheels from coming loose. Refer to the steps that follow and the axle manufacturers' manual. Use a calibrated torque wrench to tighten the lug nuts. Over-tightening may result in breaking the studs or permanently deforming the mounting stud holes in the wheels.

Remove all excess paint, oil and grease from mounting surfaces.

Start all lug nuts by hand to prevent cross threading.

Tighten lug nuts in the sequence shown in figure 9-3.

Tighten lug nuts to the torque shown in figure 9-4.

Check and retighten after the first 10, 25 and 50 miles of driving and before each tow thereafter.

Do not install aluminum wheels, aftermarket wheels or aftermarket lug nuts on your trailer. Use only original equipment wheels and lug nuts. Aluminum wheels, aftermarket wheels and aftermarket lug nuts may not meet the load carrying requirements, pressure capacity and offset as the original equipment.

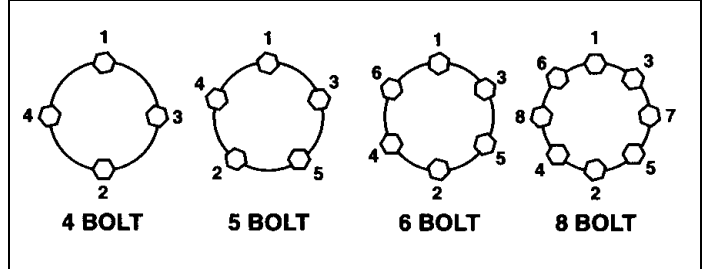


Figure 9-3 - Lug Nut Sequence of Tightening

<b>Steel Wheel Torque Requirements</b>			
<i>Lug Nut Size</i>	<i>1<sup>st</sup> Stage</i>	<i>2<sup>nd</sup> Stage</i>	<i>3<sup>rd</sup> Stage</i>
<i>1/2 Inch</i>	20-25 lb/ft	40-60 lb/ft	70-90 lb/ft
<i>5/8 Inch</i>	20-25 lb/ft	60-80 lb/ft	120-155 lb/ft

Figure 9-4 – Torque Requirements

# Living Quarters

FOR BOOKS

# Lakota Trailers

## CUSTOM LIVING QUARTERS

### **^ WARNING**

This User's Manual contains safety information and instructions for your trailer.

You must read this manual before using your trailer.

You must follow all safety precautions and instructions.

**Lakota Trailers  
4 Stoutco Drive  
P.O. Box 219  
Bristol, Indiana 46507  
574-848-1636 Phone  
574-848-1467 Facsimile  
customerservice@lakotatrailers.com**



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# 1 INTRODUCTION AND WARRANTY

## 1.1 INTRODUCTION

Thank you for purchasing a custom living quarters from Lakota Trailers. Your custom living quarters has been carefully designed to meet your specific needs.

This manual covers the living quarters in your trailer, and was prepared to provide you with information to properly operate the items in the living quarters of your trailer. Read this manual before using your trailer and follow all of the safety instructions. This manual does not cover operation of the basic trailer. Therefore, you must read, understand and follow the instructions given in the trailer manual, tow vehicle and trailer hitch manufacturers, as well as the instructions in this manual. Keep all manuals provided with your trailer in a safe place inside your trailer at all times.

Our living quarters are built with components produced by various manufacturers. Some of these items have separate instruction manuals. Where this manual indicates you should read another manual, and you do not have that manual, call Lakota Trailers at 574-848-1636 for assistance.

The living quarters conversion of the trailer has added weight to the trailer. This will affect the general driving, accelerating, stopping, cornering and overall handling characteristics of the trailer.

Due to ongoing improvements, and or changes by the manufacturer some items pictured in the owners manual may be slightly different than what is installed in the trailer.

Pictures in the manual are the most current at the time of publication of the manual.

## 1.2 WARRANTY

Lakota Corporation, hereinafter "Lakota", warrants its products to be free from defects in materials and workmanship from date of purchase by the Original Purchaser, "Original Purchase Date". See the warranty statement for your trailer model. Such warranty extends only to the original Purchaser (the first person, firm, or entity to purchase the trailer from Lakota or a Lakota

authorized dealer) upon satisfactory compliance with the following conditions:

### CUSTOMER ACCEPTANCE / WARRANTY CARD

This form will need to be filled out and sent to Lakota's warranty and service department within 30 days of purchase. This will activate the warranty and will insure proper handling of claims and/or service request.

1.The warranty extended hereby covers only the "Frame Assembly" i.e. the side rails, side and roof extrusions, floor cross members, and subframe assemblies. Components such as doors, gates, dividers and such other material as are attached directly to the Frame Assembly shall be limited in warranty to one (1) year from the date of Original Purchase.

2.Components not manufactured by Lakota are covered only by the warranties extended by the manufacturers of such components, and not by Lakota. Such non-warranted components include but are not limited to: tires, wheels, coupler, jacks, hub caps, axles, suspension components, hubs, drums, brakes, and all parts associated therewith. Requests for warranty adjustments on these items shall be made directly to their manufacturers, whose names and addresses will be furnished by Lakota to purchaser upon request.

3.No warranty is extended for damage caused by operator error in failing to torque tighten all lug nuts, check tire condition, breaking abilities and all other conditions normally associated with normal trailer operation. Additionally, operator error in failing to properly attach the trailer to the towing vehicle as prescribed by federal regulations and hitch specifications shall void any warranty otherwise made herein.

4.No warranty is extended for normal wear items, including but not limited to brakes, light bulbs, tires, brake linings, hoses and sealants.



**5. This warranty shall not apply to any damage due to loading in excess of the Gross Vehicle Weight Rating displayed on the trailer. Use of the trailer for any purpose not intended shall constitute misuse and shall void this warranty.**

**6. This warranty shall be automatically void if any modification to the trailer is made without prior written authorization for such from Lakota.**

**7. Only a Lakota authorized dealer who has received prior written authorization from Lakota for such specific service or repair, or one of Lakota's factory locations, shall be authorized to service or correct any defect in material or workmanship found in any trailer covered by this warranty.**

**8. Prior written authorization from Lakota for any specific repairs and/or adjustments shall be received before any reimbursements shall be made.**

**9. This warranty does not cover any economic loss including without limitation; payment for the loss of time or income, inconvenience, loss of trailer use, trailer rental expense, lodging bills, meals, other travel costs, storage charges and other incidental or consequential loss or damage of whatsoever nature.**

**10. Lakota and its' authorized dealers reserve the right to make design changes in trailers built and/or sold by them at any time without incurring any obligation to make the same or similar changes to trailers previously built and/or sold by them.**

**11. This warranty shall apply, and service and/or repairs shall be made only upon prior written approval by Lakota. at its option, prior to approval for service and/or repairs pursuant to this warranty, may require delivery of the damaged part, freight pre-paid, to Lakota's factory location, 4 Stoutco Dr / PO Box 219, Bristol, IN 46507, providing the damaged trailer for inspection by Lakota's authorized representative at Lakota's factory location or at a location selected by Lakota or by providing color photographs of the damaged trailer or to or from any alternative location Lakota may designate as a location for service and/or repair of the damaged trailer.**

**THIS WARRANTY IS EXPRESSLY MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS AND MERCHANTABILITY FOR A PARTICULAR PURPOSE; AND IS LIMITED IN DURATION TO THE TERM SPECIFIED HEREIN, AND NO PERSON, FIRM, OR ENTITY IS AUTHORIZED TO MAKE ANY FURTHER OR ADDITIONAL WARRANTIES ON BEHALF OF LAKOTA CORPORATION.**

## 2 GENERAL SAFETY INFORMATION

### 2.1 SAFETY ALERT SYMBOLS AND SIGNAL WORDS

The safety information in this manual is denoted by the safety alert symbol: ^

The level of risk is indicated by the following signal words.

#### **^ DANGER**

**DANGER** – Immediate hazards which **WILL** result in severe personal injury or death if the warning is ignored.

#### **^ WARNING**

**WARNING** – Hazards or unsafe practices which **COULD** result in severe personal injury or death if the warning is ignored.

#### **^ CAUTION**

**CAUTION** – Hazards or unsafe practices which could result in minor or moderate injury if the warning is ignored.

#### **NOTICE**

**NOTICE** – Practices that could result in damage to the trailer or other property.

### 2.2 MAJOR HAZARDS

This manual contains information on accessories that may, or may not be installed in your trailer. You must read the instruction manual for each of the accessories before operating them. You must follow all of the instructions and warnings in those manuals, and in this manual.

The primary hazards from operation of accessories are:

- Death by carbon monoxide poisoning from operation of:
  - Gasoline, Liquefied-Petroleum (LP) or diesel generator.
  - Liquefied-Petroleum (LP) gas appliances.

- Fire or explosion from accumulated, unburned LP gas.
- Electrocution or fire from generator or shore power.
- Crushing from the slide-out.

#### 2.2.1 GENERATOR

If your trailer is equipped with a generator, you must have and follow the generator manufacturer's instructions. You must have a functioning carbon monoxide detector in the living quarters.

Carbon Monoxide is an odorless gas that can cause death. Be certain exhaust from a running generator does not accumulate in or around your trailer, by situations such as:

- Being drawn in by fans or ventilators operated in a trailer;
- Prevailing wind;
- Being trapped between your trailer and other trailers, vehicles or buildings; or
- Being trapped between your trailer and other nearby objects.

#### **^ WARNING**

Gasoline, LP and diesel generators pose a risk of death from:

- Carbon Monoxide
- Fire and Explosion
- Electrocution

Having a working carbon monoxide detector in the living quarters before operating a generator.

Do not refuel a running generator or refuel near ignition sources.

#### 2.2.2 LP GAS FUEL SYSTEM

Keep the LP gas tank supply valves closed at all times, except when using a gas appliance.

The LP gas system in your trailer is designed to operate on LP gas only, NOT natural gas. A natural gas supply is not safe for use in an LP gas system.

Be sure all LP gas appliances are off before opening the LP gas tank supply valves. If an

## General Safety Information

appliance is left on, gas could accumulate in the trailer creating a fire or explosion hazard.

Have the LP gas tanks filled by a qualified LP gas supplier.

Turn off all gas appliances and pilot lights before refueling LP gas tanks, gasoline or diesel fuel tanks or when towing trailer. Some automatic ignition appliances may continue to spark even after the gas is turned off at the supply valve.

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

### **^ DANGER**

Risk of fire or asphyxiation.

Make certain the exhaust from LP appliances is directed to the outdoors.

Have a working carbon monoxide detector in the living quarters of your trailer before operating any LP gas appliance.

Do not operate portable fuel burning equipment, including wood and charcoal grills and stoves inside the trailer.

### **^ WARNING**

Risk of death due to fire or explosion.

Only connect an LP gas system to a supply of LP gas, NOT natural gas.

Do not store LP gas tanks inside the trailer.

Only fill an LP gas tank 80% full.

Only fill the tank with LP gas (butane or propane).

Overfilled tanks can release gas and may cause an explosion.

### **^ WARNING**

Risk of fire or explosion.

Never use a flame, heat lamp or hair dryer to thaw an LP gas regulator. Use an incandescent light bulb.

Do not remove the regulator cover or attempt to service the LP gas regulator.

### **^ WARNING**

Risk of fire or explosion.

LP Gas tanks can discharge gas into the atmosphere as the air temperature changes.

Never place or store an LP gas tank, gasoline or other flammable liquids inside the trailer.

### **^ WARNING**

Risk of fire or explosion.

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

### 2.2.3 CARBON MONOXIDE (CO) HAZARD

Carbon monoxide can come from operation of gas burning appliances such as a generator, water heater, furnace, cook top and oven. Never operate any of these appliances while the trailer is in an enclosed building or confined area.

Carbon monoxide is an odorless gas that can cause brain damage or death.

Symptoms of carbon monoxide poisoning are:

- Headache
- Drowsiness
- Nausea
- Vomiting

- Shortness of breath
- Unconsciousness

If any of these symptoms exist, remove the victim immediately to fresh air and get medical attention.

Never operate portable fuel burning equipment (including charcoal and wood) inside the trailer. Carbon monoxide is produced by this equipment.

Never use a cooking appliance to provide comfort heating.

### **^ DANGER**

Risk of death or brain damage from carbon monoxide.

Do not operate gas appliances or generator while the trailer is in an enclosed building or confined area.

### **^ WARNING**

Risk of carbon monoxide poisoning or fire.

The fumes from burning gas contain carbon monoxide, an odorless gas that can cause death or brain damage.

Cooking appliances used for comfort heating can ignite surrounding surfaces. Do not use cooking appliances for comfort heating.

Test the carbon monoxide detector before operating any gas burning appliance.

#### 2.2.4 SHORE POWER

Shore Power is the name given to connecting your trailer to a source of electrical power using a cord specifically designed for that purpose.

### **^ WARNING**

Shore power poses a risk of death due to electrocution or fire.

Always use the electrical cord specifically designed for shore power connection. Never use an ordinary extension cord.

Always connect the electrical cord to a grounded source of shore power.

Do not remove prongs from the shore power plug.

Connect only to source of proper voltage.

Do not overload electrical circuits.

Always replace fuses or circuit breakers with correct rating.

#### 2.2.5 IMPROPER LOADING

The total weight of the load you put in or on the trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR). If you do not know the empty weight of the trailer plus the cargo weight, you must weigh the loaded trailer at a commercial scale. In addition, you must distribute the load in the trailer such that the load on any axle does not exceed the Gross Axle Weight Rating (GAWR). If your trailer is equipped with a Tire & Loading Information Placard, mounted next to the Certification / VIN label, the cargo capacity weight stated on that placard is only a close estimate. The GVWR and GAWR's are listed on the Certification / VIN label mounted on the front left side of the trailer.

### **^ WARNING**

An overloaded trailer can result in failure or in loss of control of the trailer, leading to death or serious injury.

Never load a trailer so the weight on any tire exceeds its rating.

Never exceed the trailer Gross Vehicle Weight Rating (GVWR).

Never exceed an axle Gross Axle Weight Rating (GAWR).

### 2.2.6 SHIFTING CARGO

Since the trailer “ride” can be bumpy and rough, you must secure your cargo so it does not shift while the trailer is being towed.

#### **^ WARNING**

A shifting load can result in failure, or to loss of control of the trailer, and can lead to death or serious injury.

You must tie down all loads with proper sized fasteners, ropes, straps, etc. to prevent the load from shifting while trailering.

### 2.2.7 INAPPROPRIATE CARGO

If your trailer is designed for specific cargo, only carry that cargo in the trailer. Your trailer must not be used to carry certain items, such as people, containers of hazardous substances or containers of flammable substances.

#### **^ WARNING**

Never transport people inside your trailer. Besides putting their lives at risk, the transport of people may be illegal.

#### **^ WARNING**

Do not transport flammable, explosive, poisonous or other dangerous materials in your trailer.

Exceptions:

- Fuel stored in proper containers used in trailer living quarters for cooking.
- Fuel stored in the tank of an on-board generator.

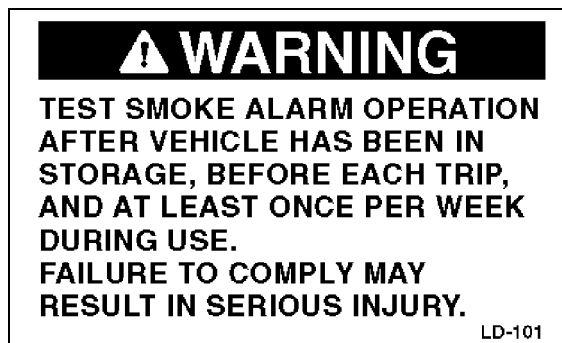
### 2.2.8 HAZARDS FROM MODIFYING YOUR TRAILER

Essential safety items can be damaged by altering your trailer. Even simply driving a nail or screw to hang something can damage an electrical circuit, LP gas line or other feature of the trailer.

Before making any alteration to your trailer, contact your dealer or Lakota Trailers at 574-848-1636 and describe the alteration you are

contemplating. Altering your trailer may void the manufacturer’s warranty.

### 2.2.9 SAFETY WARNING LABELS ON YOUR TRAILER



*Figure 2-1 – Smoke Alarm Safety Decal, Located Near Smoke Alarm And On Outside Of Cook Top Lid*



*Figure 2-2 – Cook Top Safety Decal, Located On Inside And Outside Of Cook Top Lid*

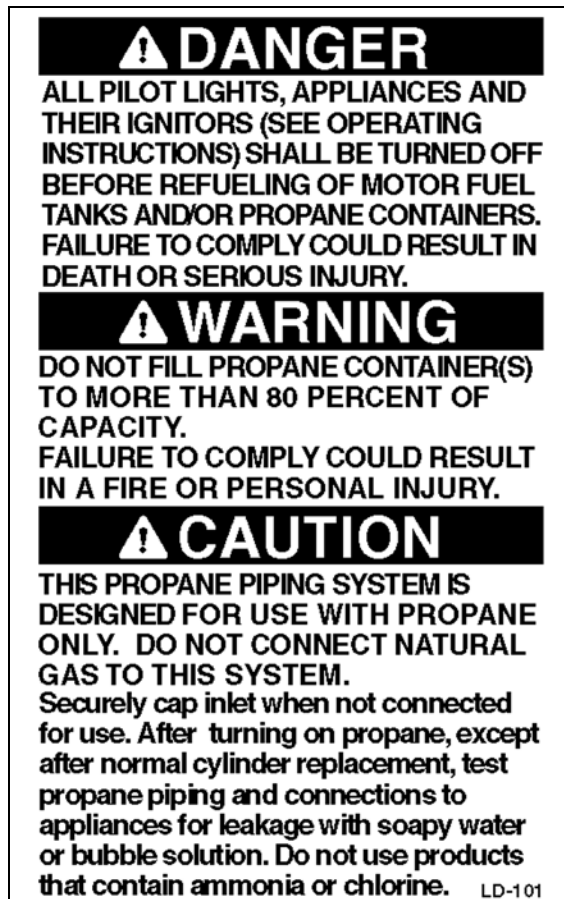


Figure 2-3 – LP Gas Safety Decal, Located Near LP Gas Tanks

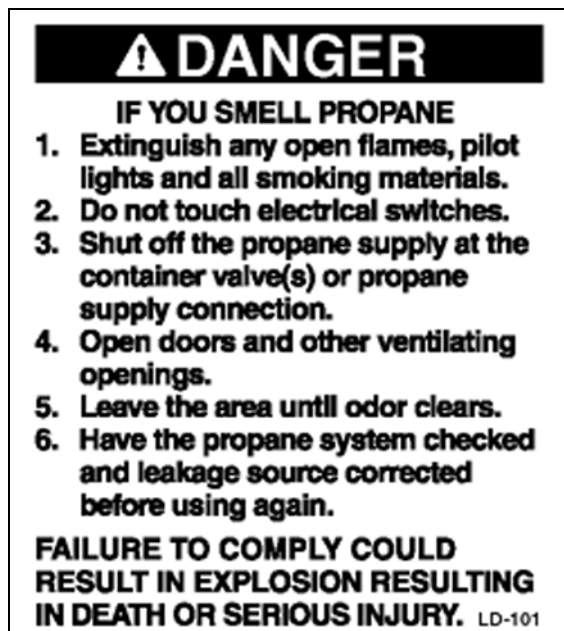


Figure 2-4 – Propane Safety Decal, Located On An Interior Wall And Cook Top Lid

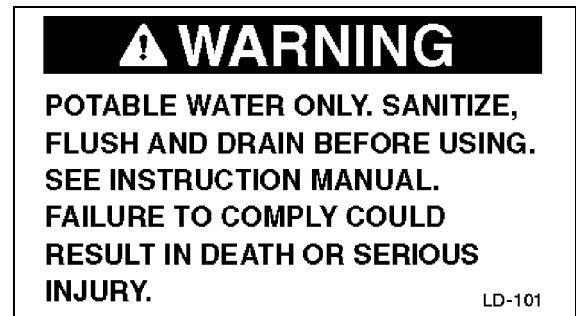
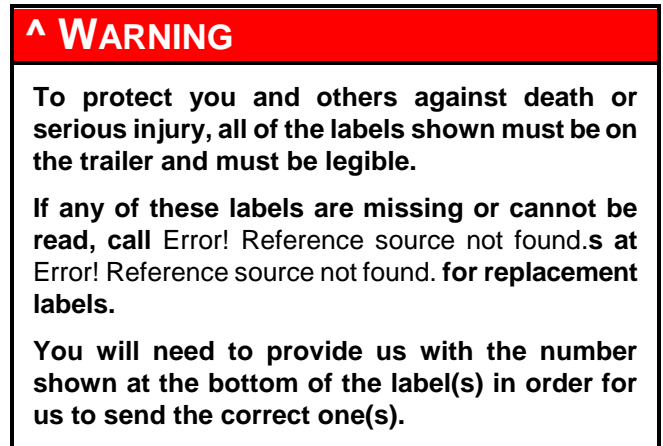


Figure 2-5 – Water Safety Decal, Located Near The Fresh Water Connector



#### 2.2.10 REPORTING SAFETY DEFECTS

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

If NHTSA receives similar complaints, it may open an investigation, and if it finds 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 Lakota.

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to <http://www.safercar.gov>; or write to: Administrator, NHTSA, 1200 North Jersey Avenue SE., Washington, DC 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.



### 3 SAFETY ALARMS AND FIRE EXTINGUISHER

Your trailer is equipped with a:

- Carbon monoxide detector
- LP gas leak detector
- Smoke detector
- Fire extinguisher

Test each of the installed detectors, and verify the fire extinguisher level of charge before each trip, or at least once per week.

#### 3.1 CARBON MONOXIDE DETECTOR

##### **^ DANGER**

Risk of death or brain damage from carbon monoxide.

Do not operate gas appliances or generator while the trailer is in an enclosed building or confined area.

The carbon monoxide operates off of a battery installed in the detector, not the trailer battery.

Press the test button until alarm sounds, then release. See figure 3-1. If alarm does not sound, replace the battery and retest. If the detector still does not work, replace it before using any gas appliance.

Refer to the information provided by the carbon monoxide detector manufacturer for additional safety, operating and maintenance information.

Replace the carbon monoxide detector battery at least every three months.



Figure 3-1 – Carbon Monoxide Detector

#### 3.2 LP GAS DETECTOR

##### **^ WARNING**

Risk of explosion or fire.

Verify the LP gas detector is operational before opening the gas supply valves.

The LP gas detector operates off the trailer 12 volt battery.

Press the test/reset button until alarm sounds, then release button. See figure 3-2. The detector will sound alarm.

The LED will flash red, and return to normal operation, which is a green light. A red LED indicates danger.

Refer to the information provided by the LP gas detector manufacturer for additional safety, operating and maintenance information.



Figure 3-2 - LP Gas Detector

##### **^ WARNING**

Risk of fire or explosion

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.



### 3.3 SMOKE ALARM

#### **^ WARNING**

Risk of smoke inhalation or fire.

Verify the smoke detector is operational before occupying the living quarters.

The smoke alarm operates off a battery installed in the alarm.

Press the test button until alarm sounds, then release. See figure 3-3. If the smoke detector alarm does not sound, replace the battery and retest. If the smoke detector does not work with a new battery, replace it before using the trailer.

Refer to information provided by the smoke alarm manufacturer for additional safety, operating and maintenance information.

Replace the smoke alarm battery at least every three months.



*Figure 3-3 – Smoke Detector*

### 3.4 FIRE EXTINGUISHER

Check the gauge on the fire extinguisher (A). See figure 3-4. The indicator must be in the green zone. If the indicator is not in the green zone, the fire extinguisher must be recharged or replaced.

Refer to the information provided by the fire extinguisher manufacturer for recommended replacement, recharging information, safety, operating and maintenance information.



*Figure 3-4 – Fire Extinguisher*

## 4 LP GAS SYSTEM

### 4.1 LP GAS USAGE INFORMATION

The exhaust fumes from burning LP gas contain carbon monoxide.

Carbon monoxide gas is odorless and can cause death or brain injury if inhaled. The carbon monoxide detector in the living quarters of your trailer must be operational.

The exhaust hood must be turned on and a window opened while using the cook top.

**NEVER** use cooking appliances for comfort heating.

**NEVER** operate portable gas burning appliances inside the trailer.

**NEVER** leave appliances on while towing trailer.

#### **^ DANGER**

Risk of carbon monoxide poisoning or fire.

Do not operate LP gas appliances while the trailer is in an enclosed building or confined area.

Do not use cooking appliances for comfort heating. The flame could ignite surrounding surfaces and the fumes contain carbon monoxide.

Test the carbon monoxide detector for operation before operating any gas appliances.

Sparks or an open flame can ignite unburned LP gas. To prevent the accumulation of unburned LP gas, you must:

- Turn appliances and gas tank supply valves off when not in use.
- Verify all appliances are off before opening LP gas tank supply valves.
- LP gas detector in trailer must be operational.

#### **^ WARNING**

Risk of fire or explosion.

LP Gas tanks can discharge gas into the atmosphere as the air temperature changes.

Never place an LP gas tank, gasoline or other flammable liquids inside the trailer.

The LP gas system in your trailer is designed to operate on LP gas only, NOT natural gas. A natural gas supply is not safe for use in an LP gas system.

#### **^ WARNING**

Risk of fire or explosion.

Do not connect an LP gas system to a supply of natural gas.

When used for the first time, or after a period of storage, the LP gas lines can be full of air, and may need to be purged of air, before the appliances will stay lit. Have the LP gas lines purged by your trailer dealer, or an LP gas dealer.

#### **^ WARNING**

Risk of death due to fire or explosion.

Extinguish all pilot lights and turn off all appliances before refilling fuel or LP gas tanks.

Do not fill an LP gas tank more than 80% full – overfilled tanks can release gas and cause an explosion.

Do not fill the tank with any gas other than LP (butane or propane).

Do not store LP gas tanks inside the trailer.

Do not operate portable gas appliances inside the trailer.

Keep the shutoff valves on your LP gas tanks closed at all times, except when you are operating an LP gas appliance. Before opening the LP shutoff valve, turn off all LP gas appliances. If an appliance is on when you open the shutoff valve, LP gas may accumulate in the trailer, which can result in an explosion.

Do not use any tool to open or close the shutoff valve. If the shutoff does not completely stop the flow of LP gas when it is hand-tightened, have the shutoff valve replaced by an LP gas supplier.

LP gas leaks can result in fire or explosion. If your trailer is equipped with an LP gas system, it must also be equipped with an LP gas detector. The LP gas detector will be located near the floor to detect

the heavier-than-air LP gas. If a leak is suspected, use a soapy water solution to search for the leak. Do not use a solution that contains ammonia or chlorine (common in window and other household cleaning compounds), because those chemicals will cause LP piping corrosion.

### **^ WARNING**

**Risk of fire or explosion.**

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

LP gas is either propane or butane that is compressed into liquid form. LP gas must be completely vaporized before being burned. Butane gas will not operate if the outside temperature is 32° F or lower.

### **NOTICE**

Butane gas can be used only when the temperature is above freezing (32 degrees F).

Propane gas will operate at temperatures as low as minus 44 degrees Fahrenheit (-44 F).

Keep the regulator for the LP gas system (located near the LP gas tank) covered with a guard to protect it from road debris.

If you store your trailer, make sure all appliances and generators are disabled prior to storing.

### 4.1.1 LP GAS SYSTEM TROUBLESHOOTING

- Having liquid “gas” at your appliance is an indication the LP gas tank is overfilled, or the temperature is too cold.
- If your LP gas appliances do not stay lit, it might be because your LP gas system is contaminated with air or moisture. Many LP gas vendors have facilities to purge the air from an LP gas system.
- If your LP gas system is not providing gas, even with the shutoff valve open, it might be because the LP gas regulator has frozen water in it.
- As the temperature decreases, so does the vaporization rate for LP gas. Butane cannot be used when the temperature is 32° F or lower. In winter conditions, the vaporization rate for propane may not be enough to allow normal gas consumption. An insufficient fuel supply will resemble a frozen regulator. Reduce gas consumption before having the regulator inspected.

### 4.1.2 LP GAS TANK REGULATOR

The regulator is located between the LP gas supply tanks.

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

Move the changeover lever (A) to the tank you want to use. This tank will be the service tank and the other will be the reserve tank. Open both tank supply valves. The indicator (B) will appear clear. This indicator will continue to appear clear until the service tank is empty. When the service tank is empty, the regulator will automatically begin drawing LP gas from the reserve tank and the indicator will illuminate red.

To remove the empty tank, move the changeover lever to the reserve tank. The indicator will appear clear and the reserve tank now becomes the service tank. Close the supply valve on the empty tank, disconnect line and have the tank refilled by a LP gas supplier.



*Figure 4-1 – LP Gas Regulator*

A regulator may freeze due to moisture in the LP gas, which can block the gas flow to the appliances. You can try thawing it with an incandescent light or see your LP gas supplier

Keep the gas tank supply valves closed while not in use to help reduce the chance of moisture entering the LP gas system.

### **^ WARNING**

Risk of fire or explosion.

Never use a flame, heat lamp or hair dryer to thaw an LP gas regulator. Use an incandescent light bulb.

Do not remove the regulator cover or attempt to service the LP gas regulator.

## 5 WATER SYSTEM

### NOTICE

**Risk of equipment damage.**

**Trailer and water system can be damaged by freezing temperatures.**

**Drain water system and winterize if trailer will be subjected to freezing temperatures.**

### 5.1 POTABLE WATER SUPPLY

The potable water system provides water to the faucets, water heater, toilet and shower. Water can be supplied by either the water storage tank in the trailer, or by an external water source.

### 5.2 EXTERNAL WATER SUPPLY

An external water supply can be connected to the trailer water system. This connection bypasses the water pump, filter screen and potable water storage tank, supplying water directly to all faucets, water heater and toilet. A check valve prevents the external water supply from filling the potable water storage tank.

### NOTICE

**Risk of equipment damage.**

**Trailer water system can be damaged by a high pressure external water supply.**

**Limit external water supply pressure to 100 psi.**

The external water supply pressure must not exceed 100 psi, or damage may occur to the trailer water system. Remove cover (A) and connect hose approved for potable water to trailer connector. See figure 5-1.



*Figure 5-1 – External Water Supply Connector*

#### **To Disconnect External Water Supply:**

1. Turn off the external water supply.
2. Open a faucet to relieve pressure in the trailer water lines.
3. Disconnect water hose, remove regulator, install cover and close access door.

### 5.3 DISINFECTION/SANITATION

Disinfect the potable water tank after storage and at least every three months during continuous usage.

#### **To disinfect the water system:**

1. Prepare a chlorine solution using 1 gallon of water and 1/3 cup household bleach (sodium hypochlorite solution). Prepare 1 gallon of water/chlorine solution for every 15 gallons of tank capacity. This will result in a residual chlorine concentration of 50 parts per million (ppm) in the water system.
2. Turn the water pump switch off.
3. With tank empty, pour chlorine solution into the tank.
4. Completely fill water tank with fresh water. Turn water pump switch on and open each faucet and run the water until a distinct odor of chlorine can be detected in the water discharge. Turn off faucet as soon as chlorine is smelled.
5. Allow the system to stand at least 4 hours when disinfecting with 50 ppm residual chlorine. Disinfection will not occur if the 50 ppm solution is removed before the 4 hour time period.



6. If a shorter time period is desired, use a 100 ppm chlorine concentration in the system for at least 1 hour. Disinfection will not occur if the 100 ppm solution is removed before the 1 hour time period.

7. To mix a 100 ppm concentration, use 1/2 cup of household bleach with 1 gallon of water to prepare the chlorine solution.

8. Drain water tank at a RV waste dumping facility and flush tank with fresh potable water.

### 5.4 FILL POTABLE WATER TANK

*Note: Be certain you are filling the potable water storage tank from an approved potable water source, or a source you know is safe.*

To fill the potable storage tank, open the cover (A) on the potable tank connector and insert an approved potable water hose. See figure 5-2.



Figure 5-2 – Fill Potable Water Tank

### 5.5 WATER PUMP

When you are using the installed potable water tank, the pressure is supplied by a water pump. The pump will run as needed when a faucet is

opened or the toilet is flushed. There is an on/off switch for the pump, usually located on the wall near the door. The pump will operate only if this switch is on.



Figure 5-3 – Water Pump Control Panel

The water pump control panel also indicates the level in water tank, waste tanks and 12 volt battery charge level. Press and hold the respective monitor switch (B) to activate the display. To get an accurate battery level reading, the trailer must be disconnected from shore power, or the power converter and all 12 volt loads turned off.



### 5.6 WATER FILTER/SCREEN

A water filter/screen (A), located near the water tank, is installed on the inlet of the water pump to trap debris before entering the trailer water system. When the water tank is empty, or at least every three months, remove the cap and filter/screen. Backwash filter with clean water and reinstall. See figure 5-4.



Figure 5-4 – Water Filter/Screen, Winterization line and valves

### 5.7 TOILET

The toilet is operated by the foot lever located at the front of the toilet.

Add water to the bowl by pulling up on lever, or push down on lever to flush. Hold lever down until contents leave the bowl.

Use only tissue approved for recreational vehicles to prevent clogging in the system.

### 5.8 WATER HEATER

Your trailer may be equipped with one of several sizes of LP gas operated water heaters. Use the following instructions and the manufacturer's instructions for the water heater installed in your trailer.

#### **^ DANGER**

Risk of carbon monoxide poisoning.

Do not operate water heater while the trailer is in an enclosed building or confined area.

Test the carbon monoxide detector for operation before operating any gas appliances.

#### **^ WARNING**

Risk of explosion.

LP gas may accumulate in the trailer if the appliance control is on and the gas supply valves are opened.

Verify appliances are off before opening gas supply valves.

Test LP gas detector before opening gas supply valves.

#### **^ WARNING**

Risk of fire or explosion.

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

#### **^ WARNING**

Risk of fire or explosion.

Never store flammable items near this or any other appliance.

Appliances and LP gas valves must be turned off while refueling and towing trailer.



## NOTICE

**Risk of water heater damage.**

Water heater will be damaged if control is turned on without water in water heater tank.

Verify there is water in the water heater by turning on water pump and opening a hot water faucet to check flow.

### 5.8.1 OPERATION

Carbon monoxide is a gas that can cause death. Be certain no exhaust from the water heater can accumulate in areas where people or animals are likely to be present.

1. Verify on/off switch (A) is in the off position. See figure 5-5.
2. Open valves on LP gas tanks.
3. Verify there is water in the water heater and move the water heater switch (A) to the ON position. There will be a slight delay before the electronic ignition lights the burner. If the water heater fails to light, it will automatically attempt to relight again. If the burner does not light after the second attempt, the reset light (B) will illuminate. If the reset light is illuminated, have the water heater inspected by a qualified technician. The light will stay on unless the heater is trying to light or is lit.
4. To turn water heater off, move control switch (A) to the off position.
5. For long term storage, see Section 12.



*Figure 5-5 – Water Heater Control*

## 5.9 DRAIN WATER TANK AND LINES

### ^ WARNING

**Crushing hazard.**

The tow vehicle and trailer could be inadvertently moved while a person is under the trailer.

The tow vehicle engine must be off, ignition key removed and parking brakes set before entering the area under the trailer.

Drain locations will vary based on the floor plan of the trailer and options installed. From under the trailer, locate the water lines that go through the trailer floor (A), these will be the drains. Remove caps (A) and open all faucets to drain potable water tank and lines. Install caps after draining. See figure 5-6.



*Figure 5-6a – Low Point Drain Lines*



*Figure 5-6b-Fresh Tank Drain*

### 5.10 DRAIN WASTE TANKS

#### NOTICE

Drain waste tanks at a recreational vehicle waste dumping facility.

1. Remove waste drain hose from holding tube (A). Holding tube is usually located under the gooseneck. See figure 5-7.



*Figure 5-7 - Waste Drain Hose Holding Tube*

2. Remove cap from waste connector (B) and connect drain hose. See figure 5-8.
3. Place other end of drain hose into dumping facility receptacle. Ensure hose will not push out when drain valve is opened.
4. Pull out on appropriate drain valve handle (C waste water) or (D sewage) to drain tanks. Draining the waste water tank last will flush the hose of most solids. Close drain valves, disconnect hose and install cap after draining.
5. Rise drain hose and return to holding tube.



*Figure 5-8 - Drain Waste And Sewage Tank*

## 6 ELECTRICAL SYSTEM

### 6.1 GENERAL INFORMATION

Your trailer is equipped with a 12 volt DC battery system and a 30 amp 110 volt electrical system. Both systems are controlled by a power converter.

The 12 volt system includes the batteries, 12 volt circuit breakers and 12 volt loads (water pump and lights)

The 110 volt system includes the shore power cord, 110 circuit breakers, and 110 volt loads (air conditioner, microwave and television)

110 volt electrical power is supplied to the trailer by the shore power cord. This electrical power goes to the power converter. The power converter will automatically convert a portion of the 110 volt power to 12 volt power. All of the items in the trailer normally powered by the batteries will then be powered by the converter. The converter has a charging circuit that will charge the 12 volt trailer batteries while the trailer is connected to shore power when the battery disconnect (see section 6.1.2) is in the on position.

### 6.2 12 VOLT SYSTEM

#### 6.2.1 CONNECT TO TOW VEHICLE

The seven pin trailer connector is wired to trickle charge the trailer batteries while towing.

#### 6.2.2 DISCONNECT SWITCH

The trailer is equipped with a 12 volt disconnect switch (A) located near the battery box. See figure 6-1.

This switch must be on to operate any 12 volt loads in the trailer or to allow the batteries to charge while connected to shore power or running the generator.

Turn the switch off during periods of storage or while trailer is not in use.



Figure 6-1 – 12 Volt Disconnect Switch

#### 6.2.3 BATTERIES

The trailer 12 volt batteries are located in the battery box under the gooseneck. See figure 6-2.

The disconnect switch must be on to operate any 12 volt loads in the trailer, and to allow the batteries to charge while connected to shore power or running the optional generator.



Figure 6-2 – 12 Volt Batteries

### 6.3 GENERATOR

#### **^ WARNING**

Risk of severed digits.

The generator can be started from a remote switch inside the trailer.

Disconnect negative (-) battery cable from the generator battery before servicing the generator.

Your trailer may be equipped with one of several sizes of generators. The generator is to be used as a

backup in a limited capacity, and is not intended to power all the loads in trailer at one time.

Refer to the information provided by the generator manufacturer for additional safety, operational and maintenance information.

### **^ DANGER**

Risk of death or brain damage from carbon monoxide.

Do not operate generator while the trailer is in an enclosed building or confined area.

### **^ WARNING**

Gasoline, LP and diesel generators pose a risk of death from:

- Carbon Monoxide
- Fire and Explosion
- Electrocution

Have a working carbon monoxide detector in the living quarters before operating a generator.

Do not refuel a running generator or refuel near ignition sources.

Carbon monoxide is a gas that can cause death. Be certain no exhaust from the generator can accumulate in areas where people or animals are likely to be present.

## 6.4 SHORE POWER

### **^ WARNING**

Shore power poses a risk of death due to electrocution or fire.

Always use the electrical cord specifically designed for shore power connection. Never use an ordinary extension cord.

Always connect the electrical cord to a grounded source of shore power.

Do not remove prongs from the shore power plug.

Connect only to source of proper voltage.

Do not overload electrical circuits.

Always replace fuses or circuit breakers with correct rating.

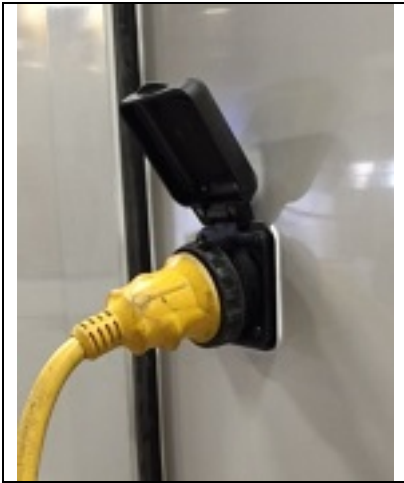
### 6.4.1 CONNECT SHORE POWER

Your trailer is equipped a 30 amp shore power cord.

Do not use extension cords or adapters.

If the power source at your site is not equipped for your shore power cord, use the generator (if equipped) or move to another site.

1. Open cover and connect shore cord (A) to trailer connector. See figure 6-4.
2. Connect shore cord to proper power source.
3. While connected to shore power, the 12 volt disconnect switch on the front of the trailer must be in the on position to charge the trailer batteries.



*Figure 6-4 – Shore Power Cord*

### 6.4.2 DISCONNECT SHORE POWER

**1. Turn off all electrical loads in the trailer.**

- 2. Disconnect shore cord from electrical source.**
- 3. Disconnect shore cord from trailer and close cover.**
- 4. Return shore cord to storage bay.**



## 7 SLIDE-OUT

### 7.1 EXTEND SLIDE-OUT

#### **^ WARNING**

Risk of crushing.

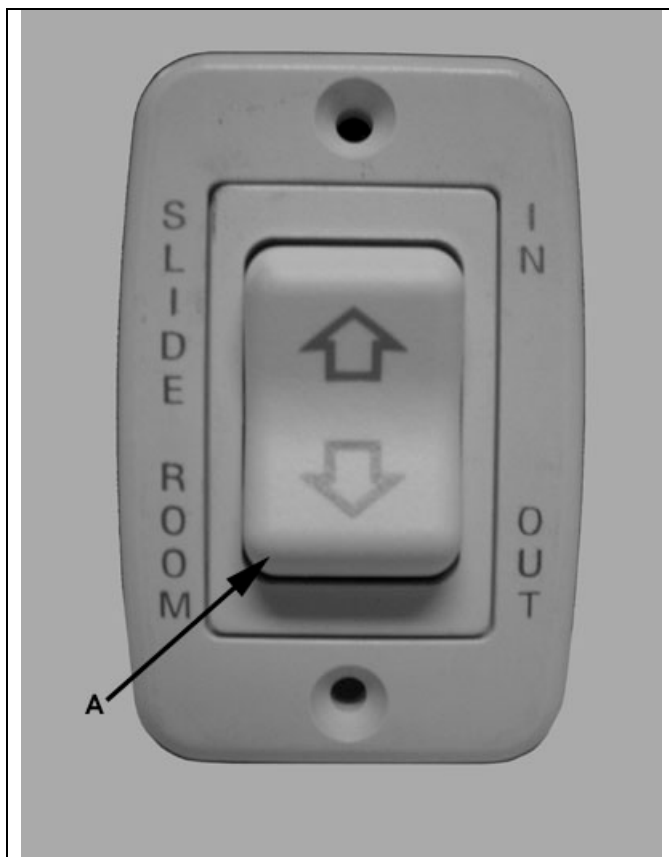
Keep bystanders away from the inside and outside of slide-out while extending and retracting.

#### **NOTICE**

Verify there is adequate clearance to fully extend the slide-out.

Trailer must be level to prevent damage to trailer and slide-out.

To extend the slide-out, press and hold the bottom (A) of slide-out room switch. Releasing switch will stop movement of the slide-out. Release switch when slide-out is fully extended. See figure 7-1 and 7-2.



*Figure 7-1 – Slide-out Switch, Out*



*Figure 7-2 – Slide-out Open*

### 7.2 RETRACT SLIDE-OUT

#### **^ WARNING**

Risk of crushing.

Keep bystanders away from the inside and outside of slide-out while extending and retracting.

The pinch points can sever digits. See figure 7-3.



*Figure 7-3 – Slide out Pinch Points*

To retract the slide-out, press and hold the top (B) of slide out room switch. Releasing switch will stop movement of the slide-out. Release switch when slide-out is fully retracted. See figure 7-4.

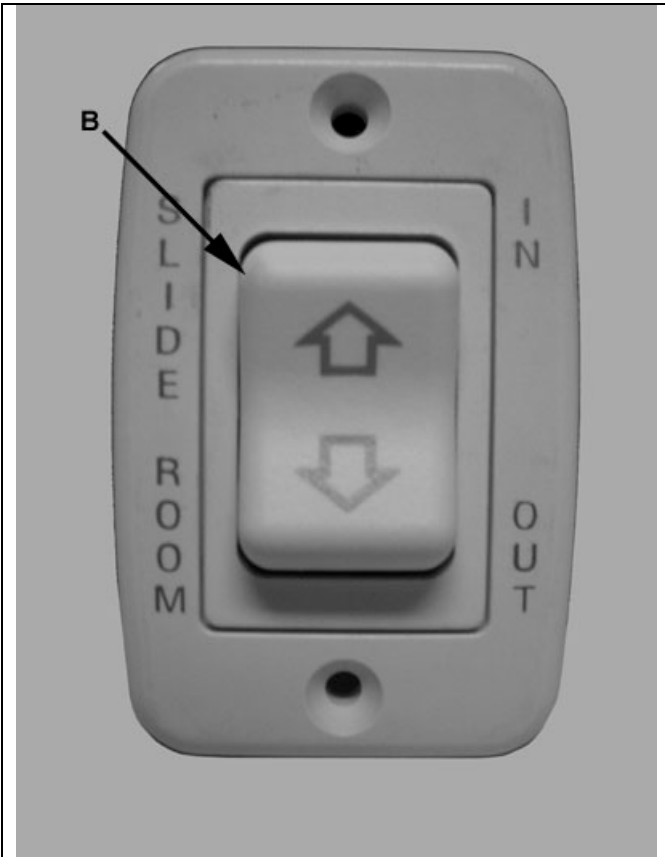


Figure 7-4 – Slide-out Switch, In

## 7.3 MANUALLY OPERATE SLIDE-OUT

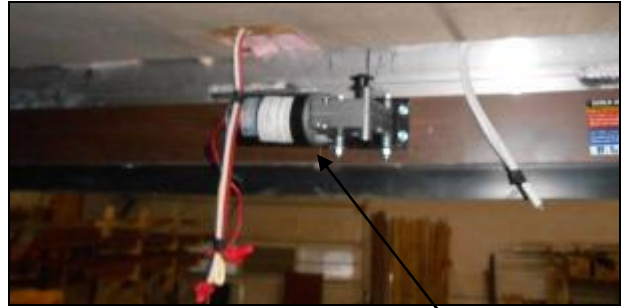
The slide-out is equipped with manual over ride to extend or retract the slide-out in the event of a power failure.

### NOTICE

Manual operation is for emergency use only, in the event of a power failure.

Do not use manual operation to override system when electrical system is unable to operate slide-out.

### 7.1.1



The motor for your cable slide room is located on the interior wall above the slide room. See figure A. Some interior trim pieces will need to be removed to gain access to the motor.

Locate the included flexible shaft in your owner's packet. Attach the flexible shaft to the 1/4" hex fitting on the end of the motor.

Attach 1/4" socket & ratchet, or drill to the other end, and turn the proper direction to move the slide room.

If the cables tighten, and the motor is difficult to turn, **REVERSE THE DIRECTION**. Over-torquing can happen, resulting in severe damage. See figure B.





## 8 HEATING AND AIR CONDITIONING

### 8.1 HEATING

The furnace installed in your trailer is a 12 volt controlled, electronic spark ignition, LP gas furnace, similar to a home heating system.

This manual will give you the basic operating procedures. Refer to the information provided by the furnace and thermostat manufacturer for additional safety, operational and maintenance information.

#### **^ DANGER**

Risk of carbon monoxide poisoning.

Do not operate furnace while the trailer is in an enclosed building or confined area.

Test the carbon monoxide detector for operation before operating any gas appliances.

#### **^ WARNING**

Risk of explosion.

LP gas may accumulate in the trailer if the appliance control is on and the gas supply valves are opened.

Verify appliances are off before opening gas supply valves.

Test LP gas detector before opening gas supply valves.

#### **^ WARNING**

Risk of fire or explosion.

Never store flammable items near this or any other appliance.

Appliances and LP gas valves must be turned off while refueling and towing trailer.

#### **^ WARNING**

Risk of fire or explosion.

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

Carbon monoxide is a gas that can cause death. Be certain no exhaust from the furnace can accumulate in areas where people or animals are likely to be present.

#### 8.1.1 OPERATE FURNACE

1. Verify 12 volt disconnect switch is on.
2. Verify the thermostat control (A) is in the OFF position as shown. See figure 8-1.
3. Open the LP gas supply valves.
4. Select the desired temperature using the control (A).
5. To turn furnace off, move thermostat switch to OFF as shown in figure 8-1.
6. Turn off LP gas supply valves if applicable.



Figure 8-1 – Furnace Thermostat

### 8.2 FIREPLACE

If your trailer is equipped with a fireplace, the fireplace cannot be operated at the same time as the air conditioner. Locate a power switch in or near your entertainment center where your fireplace is located. The switch will be similar to a light switch in your home. This switch must be turned to the fireplace position setting in order to begin operation of the fireplace. This switch must be returned to the air conditioning position in order to operate the air conditioning.



### 8.3 AIR CONDITIONING

Your trailer can be equipped with a ducted, or a non-ducted air conditioning system. A ducted system will use the same thermostat as the furnace.

A non-ducted system has the controls mounted on the air conditioner.

The trailer must be connected to shore power or running the optional generator to operate the air conditioning.

This manual will give you the basic operating procedures. Refer to the information provided by the air conditioner manufacturer for additional safety, operational and maintenance information.

#### 8.3.1 OPERATE A NON- DUCTED AIR CONDITIONING SYSTEM

1. Verify the shore power is connected or the generator is running.
2. Move the function control (A) to the desired position.
3. Select the desired temperature using the temperature control (B).
4. To turn air conditioning off, move the function control (A) to OFF.

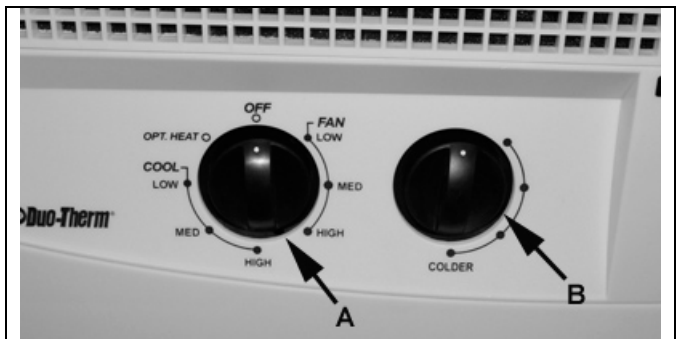


Figure 8-2 – Non-Ducted Air Conditioning Control

#### 8.3.2 MAINTENANCE

Remove the cover (A) and return air filter. Clean or replace return air filter at least every three months.



*Ducted air with digital thermostat operation.  
Verify shore power or generator is running.  
Press mode to desired operation and + or - to  
preferred temperature setting.  
Press mode to fan operation. Press + until screen  
reads AU. This will place fan in auto mode rather  
than constant operation of low or high.*

***Figure 8-2 – Return Air Filter***

## 9 APPLIANCES

### 9.1 REFRIGERATOR

Your trailer may be equipped with a two-way refrigerator. The refrigerator will operate on LP gas or 110 volt power. This manual will give you the basic operating procedures. Refer to the information provided by the refrigerator manufacturer for additional safety, operational and maintenance information.

#### **^ DANGER**

Risk of carbon monoxide poisoning.

Do not operate refrigerator on LP gas while the trailer is in an enclosed building or confined area.

Test the carbon monoxide detector for operation before operating any gas appliances.

#### **^ WARNING**

Risk of explosion.

LP gas may accumulate in the trailer if the appliance control is on and the gas supply valves are opened.

Verify appliances are off before opening gas supply valves.

Test LP gas detector before opening gas supply valves.

#### **^ WARNING**

Risk of fire or explosion.

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

#### **^ WARNING**

Risk of fire or explosion.

Never store flammable items near this or any other appliance.

Appliances and LP gas valves must be turned off while refueling and towing trailer.

Carbon monoxide is a gas that can cause death. Be certain no exhaust from the refrigerator can accumulate in areas where people or animals are likely to be present.

Press the ON/OFF button (A) in to turn the refrigerator on. See figure 9-1. The refrigerator will search for 110 volt power first. If 110 volt power is not available, the refrigerator will then switch over to operate on LP gas. Press button (B) in to override the system and go directly to LP gas operation.

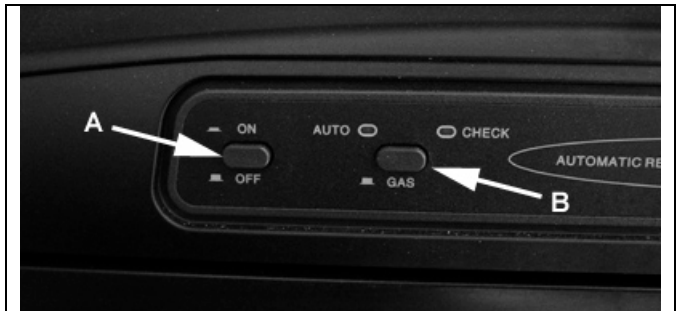


Figure 9-1 – Refrigerator Control Panel

### 9.2 COOK TOP

Your trailer may be equipped with an LP gas cook top. The exhaust hood must be on and a window open while the cook top is in use to exhaust gas vapors and cooking odors.

Read the manual provided by the cook top manufacturer for safety, operational and maintenance information.

## **^ DANGER**

Risk of carbon monoxide poisoning or fire.

Do not operate LP gas appliances while the trailer is in an enclosed building or confined area.

Do not use cooking appliances for comfort heating. Surrounding surfaces could ignite and the fumes contain carbon monoxide.

Test the carbon monoxide detector for operation before operating any gas appliances.

## **^ WARNING**

Risk of fire or explosion.

Never store flammable items near this or any other appliance.

Appliances and LP gas valves must be turned off while refueling and towing trailer.

## **^ WARNING**

Risk of explosion.

LP gas may accumulate in the trailer if the appliance control is on and the gas supply valves are opened.

Verify appliances are off before opening gas supply valves.

Test LP gas detector before opening gas supply valves.

## **^ WARNING**

Risk of fire or explosion.

If LP gas is detected (by smell or by the LP gas detector):

- Do not touch electrical switches
- Extinguish flames and pilot lights
- Open doors for ventilation
- Shut off LP gas supply at the LP tank
- Leave the area until odor clears

Correct the source of LP gas leakage before using LP appliances.

Do not use a flame to locate the source of an LP gas leak.

1. Verify that locks (A) on exhaust hood vent are open as shown. See figure 9-1. Engage locks while towing trailer.



*Figure 9-1 –Exhaust Hood Vent Locks*

2. Open a window and turn on exhaust hood.

3. Verify burner controls are off.

4. Open gas supply valve on LP gas tank.

5. Read manual provided by the cook top manufacturer for safety, operation and maintenance information. Follow these instructions for safe operation of cook top.

6. Turn burners to off position after cooking.



*Figure 9-2 – Cook Top*

### 9.3 MICROWAVE OVEN

The microwave oven is operated on 110 volt and is similar to a microwave used in a home. See figure 9-3. Read the manual provided by the microwave oven manufacturer for safety, operational and maintenance information.



*Figure 9-3 – Microwave Oven*



## 10 AWNING

### 10.1 AWNING

#### **^ WARNING**

Risk of serious injury.

Do not attempt to open the awning during rain, wind, lightning or snow conditions.

Close the awning if the possibility of these conditions exists.

#### **NOTICE**

Risk of equipment damage.

Awning, supports and trailer can be damaged by wind.

Do not open the awning if the possibility of wind in excess of 15 mph exists.

#### 10.1.1 OPEN AWNING

1.Squeeze latches on each awning arm to release inner arm from outer arm. See figure 10-1.



*Figure 10-1 – Open Awning Latches*

2.Use the pull rod provided and pull lock lever downward to the ROLL DOWN position. See figure 10-2.



*Figure 10-2 – Lock Lever*

3.Insert the end of pull rod into loop in the awning pull strap and pull the awning open. See figure 10-3 and 10-4.



*Figure 10-3 – Pull Awning Open*



*Figure 10-4 – Awning Fully Open*



4. Slide the rafter arms up to the end of the main arms until they snap into place. See figure 10-5. Tighten adjustment knob on each rafter arm. See figure 10-6.



*Figure 10-5 – Awning Rafter Arms*



*Figure 10-7 Awning arm adjustment latch*



*Figure 10-6 – Adjustment Knob*

5. Lift latches (see figure 10-7) and extend both main arms to raise awning. Slope the awning away from the trailer. Close latches to lock in position. See figure 10-8.



*Figure 10-8 – Extend Main Awning Arms*

6. If you prefer the awning patio style, release latch at base of awning arm. See figure 10-9.



*Figure 10-9 – Awning arm mounting latch*

7. Pull awning arms into the straight down position and make sure they are secure. See figure 10-10.



Figure 10-10 – Awning post fully down (patio style)

### 10.1.2 CLOSE AWNING

**1. Lift awning arm adjustment latch and fully retract both main arms. Close latches to lock in position. See figure 10-11.**



Figure 10 -11 – Awning Arms Fully Retracted

**2. Loosen adjustment knob on rafter arm. See figure 10-12.**



Figure 10-12 – Adjustment Knob

**3. Release awning rafter arm from retainer. See figure 10-13.**



Figure 10-13 – Awning rafter arm retainer

### NOTICE

**Risk of equipment damage.**

**Do not release pull strap after lock lever has been released.**

**Awning is under tension, and may roll back against the trailer with force, which may result in damage.**

**3. Securely grasp the awning pull strap and pull down slightly while simultaneously pushing the lock lever (B) upward to release. See figure 10-14.**



Figure 10-14 – Lock Lever

**4. Insert pull rod into loop on strap and gently allow the awning to roll to the trailer.**

**5. Engage latches on each awning arm. See figure 10-15.**



*Figure 10-15 – Engage Awning Latches*



# 11 INTERIOR FURNISHINGS

## 11.1 DINETTE/BED

To convert the dinette to a bed, slightly raise the table and remove center post. See Figure 11-1.



Figure 11-1 – Dinette Table

Place the table on the supports attached to the dinette seats. Lay cushions across table to form the bed. See Figure 11-2.



Figure 11-2 – Dinette Bed

## 11.2 SOFA/BED

Pull out and up on the front edge of the seat to lay the sofa down. See figure 11-3.

To convert back to a sofa, push the front edge of the seat inward while lifting upward on the backrest.



Figure 11-3 – Bed

## 11.3 EGRESS WINDOW

One or more windows installed in the living quarters are egress style windows that can be opened and used as an exit in an emergency. Pull out on the red latch (A) and push out on the bottom of the window to open. See figure 11-3.



Figure 11-3 – Egress Window Latches

## 12 STORAGE AND WINTERIZING

### 12.1 PREPARE FOR STORAGE

Properly preparing your trailer for storage will reduce the risk of damage to the trailer.

If the trailer will be stored in an area at or below 32° F, winterize the trailer to protect the trailer and water system. See section 12.2.

- Remove all perishable items from the trailer.
- Turn off the water heater, refrigerator, furnace and gas supply valves.
- Clean the refrigerator and freezer. Prop the doors open and place an open box of baking soda in each.
- Drain the water heater, water lines, fresh water tank, waste tanks and toilet.
- Close all windows and vents.
- Cover and seal appliance vent openings to prevent rodent and insect entry.
- Disconnect shoreline and house battery.
- Check with the battery manufacturer for proper storage and charging procedures.
- Check with the generator manufacturer for proper storage procedures on the generator.

### 12.2 WINTERIZE TRAILER

#### NOTICE

Risk of damage to the trailer and water system.  
Drain and winterize water system to avoid damage to the trailer, tanks, pump, lines, toilet and water heater.

You **MUST** winterize your trailer if the trailer will be subjected to temperatures at or below 32° F.

#### 12.2.1 DRAIN LINES AND ADD ANTIFREEZE

- 1.Drain waste tanks as instructed in Section 5.
- 2.Fill potable water tank at least half full and turn the water pump on.
- 3.Add approximately 10 gallons of water to the black tank by holding the toilet flush lever open.
- 4.Add approximately 10 gallons of water to the gray tank by running the sink or shower faucets.
- 5.Drive the tow vehicle and trailer to loosen and rinse material from the sides of the waste tanks.
- 6.Level the trailer.

7.Drain the waste tanks as instructed in Section 5.

8.Drain the potable water tank as instructed in Section 5.

9.Turn water pump switch on. Open all faucets and operate the toilet until water stops flowing from each. Leave faucets open and turn the water pump switch off.

10.Drain the water heater by removing plug (A), located on the outside of the trailer. See figure 12-1.



*Figure 12-1 – Drain Water Heater*

Place approximately two gallons of non-toxic recreational vehicle anti freeze into the potable water tank or use the winterization line if so equipped. A winterization line may be installed at your water pump. This line allows you to add antifreeze into your water lines without placing it in your fresh water holding tank. Close the valve to the fresh water tank and open it to the winterization line. Place line into bucket of RV antifreeze, turn on pump and pump RV antifreeze into lines.



11. Open bypass valves (B) on water heater so antifreeze will bypass water heater. Valves in figure 12-2 are in the bypass position.



*Figure 12-2 – Water Heater Bypass Valve*

12. Turn valves at pump. Insert winterization line into antifreeze.  
13. Turn water switch pump on.  
14. Close each faucet when antifreeze is present at spout.

15. Flush toilet until antifreeze is present in bowl.  
16. Turn water pump off.  
17. Drain any remaining water from waste tanks.  
18. Check all exterior seals for voids, cracks or other inconsistencies. Remove and replace caulk as needed to prevent leaks. Seal inspection and maintenance should be completed twice annually.

### 12.3 REMOVE TRAILER FROM STORAGE

- Have the LP gas system checked by a qualified technician.
- Add a few gallons of water to the holding tanks and check for leaks.
- Disinfect and sanitize the water system. See section 5.
- Check the sealing valve on the toilet for proper sealing and operation. Lubricate seal with a silicon based lubricant.
- Remove protective coverings from appliance vent openings.
- Connect and charge 12 volt batteries. Check operation of all 12 volt accessories installed in the trailer.
- Connect shoreline and check operation of all 110 volt accessories installed in the trailer.
- Check operation of carbon monoxide detector, LP gas detector and smoke detector.
- Check fire extinguisher for proper charge.
- Blow dust and debris from the back of the refrigerator in the burner area. Dust and debris in the burner could prevent the burner from being lit.
- Start refrigerator and use a refrigerator thermometer to check for proper cooling.
- Check with generator manufacturer for the proper procedure for removing the generator from storage.

### 12.4 DE-WINTERIZATION

Drain off the fresh tank and fill the fresh tank with water.

Sanitize water system.

Turn water pump on and operate all faucets, one at a time, until clear water is present.

If applicable, cycle icemaker several times until fresh water is present and reconnect valve outlet line.

Open valves and fill water heater with water.





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