

Yeti Fish House Owner's Manual



Yeti Fish Houses
Manufactured by Voyager Industries, Inc.

Yeti Models:

- 6'x8'
- 6.5'x12'V
- 6.5'x16'V
- 8'x16'V

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 **WARNING**

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

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

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GENERAL SAFETY INFORMATION

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 that you should read another manual, and you do not have that manual, call Yeti Fish Houses at 320.834.4940 for a free copy.

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	 WARNING
Immediate hazards which WILL result in severe personal injury or death if the warning is ignored.	Hazards or unsafe practices which COULD result in severe personal injury or death if the warning is ignored.
 CAUTION	 NOTICE
Hazards or unsafe practices which could result in minor or moderate injury if the warning is ignored.	Hazards that could result in damage to the trailer or other property if ignored.

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.

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 vehicle's Owner's Manual.



DANGER

Use of a tow vehicle with a towing capacity less than the Gross Vehicle Weight 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 GVWR of your trailer.

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.

Decrease your speed as road, weather and lighting conditions deteriorate.

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 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 these caveats 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 busses.

When encountering trailer sway take your foot off the gas, 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, if so equipped, 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.

Trailer Not Properly Coupled to the Hitch

It is critical that the trailer be securely coupled to the hitch ball, and that the safety chains and emergency break-away brake cable 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 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:

The trailer brakes are checked; the tires and wheels 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.

Proper Use of Safety Chains

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



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.

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 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 can result in a blowout and loss of control, which can lead to death or serious injury.

Be sure that tires are inflated to pressure indicated on sidewall before towing trailer.

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.



WARNING

Metal creep between the wheel rim and hub may cause lug nuts to loosen and could result in a wheel coming off, leading to death or serious injury.

Tighten lug nuts before each tow.

The proper tightness (torque) for lug nuts is listed on page 48 in the “Inspection and Service Instructions” chapter of this manual. Use a torque wrench to tighten the lug nuts, use the crisscross star pattern on page 47. If you do not have a torque wrench, use a lug wrench (from your tow vehicle) and tighten the nuts as much as you can. At the first opportunity, have a service garage or trailer dealer tighten the lug nuts to the proper torque.

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 initial installation, which can lead to death or serious injury.

Check lug nuts for tightness on a new trailer or when wheel(s) have been remounted after the first 10, 25 and 50 miles of driving.




WARNING

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

Be sure lug nuts are tight before each tow.

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
<p>An overloaded trailer can result in loss of control of the trailer, leading to death or serious injury.</p> <p>Do not exceed the trailer Gross Vehicle Weight Rating (GVWR) or the Gross Axle Weight Rating (GAWR).</p> <p>Do not load a trailer so that the weight on any tire exceeds its rating.</p>

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 Chapter heading "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 trailer with a gooseneck hitch, with a loaded weight of 12,000 pounds, should have 20-25% of 12,000 pounds (2400-3000 lbs.) on the gooseneck. A dump trailer will have the proper weight distribution if the load is **evenly distributed** in the dump bed. For non-flowable (discrete) loads locate the load such as to provide the proper tongue weight.

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
Ball Hitch (or Bumper Hitch)	10-15% for large trailers 6-10% for smaller utility and cargo trailers 5-7% for boat trailers

The numbers quoted above are for example purposes only and should be tailored to the specific trailer. For questions regarding the actual percent of tongue weight for the trailer, check with the manufacturer for specifics.

Uneven left / right load distribution can cause tire, wheel, axle or structural failure. Be sure your trailer is evenly loaded left / right. 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, to avoid tire overload and keep the center of gravity low.

Shifting Cargo

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


WARNING

Shifting cargo can result in loss of control of the trailer, and can lead to death or serious injury.

Tie down all loads with proper sized fasteners, ropes, straps, etc.

If the door latch is equipped with a catch that has a hole for a linchpin, use a linchpin 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.

Inappropriate Cargo

A utility trailer must not be used to carry certain items, such as people, containers of hazardous substances or containers of flammable substances.


WARNING

Do not transport people inside the trailer, even if it has living quarters. The transport of people puts their lives at risk and 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.

Inoperable Brakes, Lights or Mirrors

Be sure that the electric brakes, if so equipped, and all of the lights on your trailer are functioning properly before towing your trailer. Electric brakes and lights on a trailer are controlled via a connection to the tow vehicle, generally a multi-pin electrical connector. Check the trailer tail lights by turning on your tow vehicle headlights. Check the trailer brake lights by having someone step on the tow vehicle brake pedal while you look at trailer lights. Do the same thing to check the turn signal lights.

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 mph, 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 the taillights, brake lights and turn signals, check the electric brakes work by operating the brake controller inside the tow vehicle.

If your trailer has hydraulic "surge" brakes, pull the emergency break-away brake lanyard to check the operation of the surge mechanism. Standard mirrors usually do not provide adequate visibility for viewing traffic to the sides and rear a towed trailer. You must provide mirrors that allow you to safely observe approaching traffic.

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 and describe the alteration you are contemplating. Alteration of the trailer structure or modification of mechanical, electrical, plumbing, heating or other systems on your trailer must be performed only by qualified technicians who are familiar with the system as installed on your trailer.

Hazards from Accessories

Read and follow all of these instructions before operating the accessories. The major hazards from some of these accessories are:

Generator

If your trailer is equipped with a gasoline or diesel generator, you must have and follow the generator manufacturer's instructions. You must also have one or more carbon monoxide detectors in the trailer's accommodation spaces.

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, or in a snow bank, or other nearby objects

Do not use a vent less heat source in your Yeti. The structure is very tight. If you use an unvented heat source oxygen may be depleted and serious injury or death may occur.



WARNING

Operating gasoline and diesel generators can lead to death or serious injury by:

Carbon Monoxide
Fire and explosion
Electrocution

Have a working carbon monoxide detector in the accommodation spaces before operating a generator.

Do not refuel near ignition sources.

LP Gas Fuel System



WARNING

You can die or be brain damaged by Carbon Monoxide

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

Have a working carbon monoxide detector in the accommodation spaces of your trailer before operating an LP gas appliance. Do not operate portable grills or 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 cause an explosion.



WARNING

Risk of fire or explosion

If LP gas is detected (by smell or 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 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.

Safety Warning Labels on Your Trailer

Figure 1□1 Warning Labels and Locations



**Additional warning label
located on inside of door**



WARNING

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

If any of these labels are missing or cannot be read, call Yetti Fish Houses at 320.834.4940 for free replacement labels.

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 inspection, testing, loading and coupling. 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/electric brake and tow vehicle brake. Note the effect that 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 that 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.

Reporting Safety Defects

If you believe that 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 Yeti Fish Houses.

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

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 New Jersey Ave. SE., Washington, DC 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

Call 320.834.4940 to reach Yeti Fish Houses.

Safe Trailer Towing Guidelines

- Recheck the load tie downs to make sure the load will not shift during towing.
- Before towing, check coupling, safety chain, safety brake, tires, wheels and lights.
- Check the lug nuts or bolts for tightness.
- Check coupler tightness after towing 50 miles.
- Use your mirrors to verify that 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 55 m.p.h.
- Allow plenty of room for passing. A rule of thumb is that the passing distance with a trailer is 4 times the passing distance without a trailer.
- Shift your automatic transmission into a lower gear for city driving.
- Use lower gears for climbing and descending grades.
- Do not ride the brakes while descending grades, they may get so hot that 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.
- 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 connectors are made,
- There is appropriate slack in the safety chains,
- There is appropriate slack in the breakaway switch pull pin cable,
- The tires are not visibly low on pressure
- The cargo is secure and in good condition.

If the coupler cannot be secured to the hitch ball, do not tow the trailer. Call Yetti Fish Houses at 320.834.4940 or your dealer for assistance.

Tire Safety Information

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

“Steps for Determining Correct Load Limit - Trailer”.

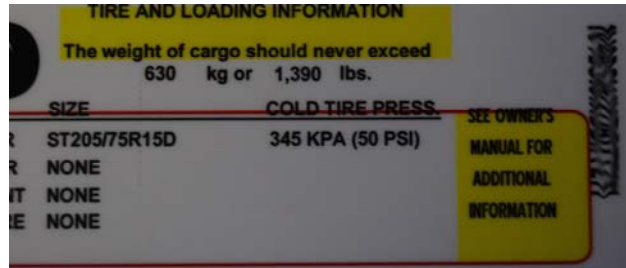
“Steps for Determining Correct Load Limit – Tow Vehicle”.

Information from the NHTSA brochure entitled “Tire Safety – Everything Rides On It”.

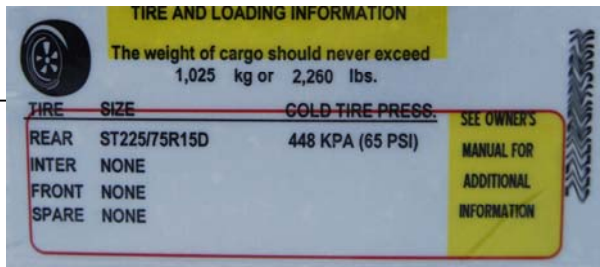
This brochure describes the following items;

- 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



6x8, 6.5x12, 6.5x16 tire specs—above.
8x16 tire specs—right.



Steps for Determining Correct Load Limit – Trailer

Trailers 10,000 Pounds GVWR or Less

Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs.,” on your vehicle’s placard. See figure above.

This figure equals the available amount of cargo and luggage load capacity. 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.

Steps for Determining Correct Load Limit – Tow Vehicle

Locate the statement, "The combined weight of occupants and cargo should never exceed XXX lbs.," on your vehicle's placard.

Determine the combined weight of the driver and passengers who will be riding in your vehicle. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds. 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 x 150) = 650 lbs.).

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.

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.

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

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

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

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

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

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

Safety First—Basic Tire Maintenance

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

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

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

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

Both placards and certification labels are permanently attached to the trailer near the left front.

Understanding Tire Pressure and Load Limits

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

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.

Checking Tire Pressure

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

Most tires may naturally lose air over time.

Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.

With radial tires, it is usually not possible to determine under inflation by visual inspection.

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

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

Steps for Maintaining Proper Tire Pressure

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

Step 2: Record the tire pressure of all tires.

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

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

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

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

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

Tire Size

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

Tire Tread

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

Tire Balance and Wheel Alignment

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

Tire Repair

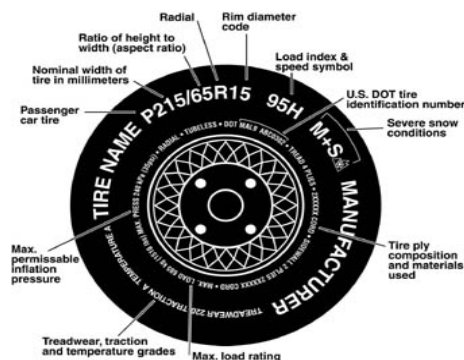
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim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

Tire Fundamentals

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

Information on Passenger Vehicle Tires

Please refer to the 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.

U.S. DOT Tire Identification Number

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

Tire Ply Composition and Materials Used

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

Maximum Load Rating

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

Maximum Permissible Inflation Pressure

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

UTQGS Information

Tread wear Number

This number indicates the tire's wear rate. The higher the tread wear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter

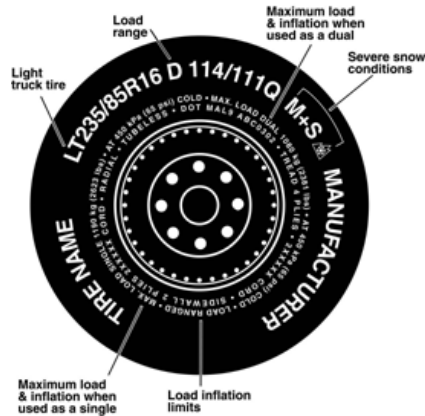
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

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".

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.

Tire Safety Tips

Preventing Tire Damage

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

Tire Safety Checklist

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

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.

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 Gross Combination Weight Rating (GCWR) and make certain the trailer's rated capacity is less than or equal to the tow vehicle's rated towing capacity. If you already have (or plan to buy) a trailer, make certain that the tow rating of the tow vehicle is equal to or greater than the GVWR of the trailer, and that the GCWR will be within limits.



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.

Trailer Information—Certification / VIN Label



Certification / VIN tag contains the following critical safety information

for the use of your trailer:

MANUFACTURER: Name of trailer manufacturer

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 that 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 manufacturer's 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.

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

VIN: The Vehicle Identification Number.

VEHICLE TYPE: Generally the word "trailer" is used. However, after this you may put a Model #, or additional descriptor.

Definitions

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 that a 300 horsepower, 5,000 pound truck has.

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 that is 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.

Jack: A device on the trailer that is used to raise and lower the trailer tongue. On larger trailers the jack is sometimes called the “landing gear.”

 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:	
The trailer brakes are checked; the tires and wheels 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.	

Trailer with Ball-Hitch Coupler

A ball hitch coupler connects to a ball that is located on or under the rear bumper of tow vehicle. This system of coupling a trailer to a tow vehicle is sometimes referred to as “bumper pull.”

A ball hitch trailer may be fitted with a tongue jack that can raise and lower the coupler. The tongue jack is mounted to the A-frame (front, or tongue) part of the trailer. By rotating the jack handle clockwise, the jack will extend and raise the tongue of the trailer.



Be sure the Ball Hitch coupler is 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. Also, the ball size must be the same as the coupler size. 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 THAT THE HITCH BALL BE OF 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.

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.



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 or 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.

Be 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. Use the jack if one is provided; otherwise, use wood or concrete blocks to support the trailer tongue.

Prepare the coupler and hitch

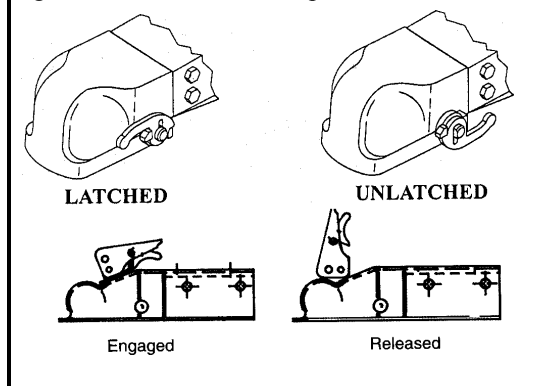
Lubricate the hitch ball and the inside of the coupler with a thin layer of automotive bearing grease. If your trailer is equipped with a jack, raise the coupler above the ball height.

Open the coupler locking mechanism. Ball couplers have a locking mechanism with an internal moving piece (ball clamp) and an outside handle, wheel, or latch.

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, if the trailer jack has raised the coupler.

Figure 3 □ 1 Ball Hitch Coupler Mechanism



Couple the trailer to the tow vehicle

If your trailer does not have a jack, you will have to lift the coupler and place it over the ball.

If you have a jack, 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 a pin or lock through the hole in the locking mechanism.

Be sure the coupler is all the way on the hitch ball and the locking mechanism 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, after the coupler is locked to the hitch

**NOTICE**

Overloading can damage the tongue jack. Do not use the tongue jack to raise the tow vehicle more than one inch.

Lower the trailer so that its entire tongue weight is held by the hitch, and continue retracting the jack to its fully retracted position.

Uncoupling the Ball Hitch Trailer with Tongue Jack

Follow these steps to uncouple your ball hitch trailer from the tow vehicle:

Block trailer tires to prevent the trailer from rolling, before jacking the trailer up.

Disconnect the electrical connector.

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.

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 that they:

Criss-cross underneath the coupler so if the trailer uncouples, the safety chains can hold the tongue up above the road.

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 "S" 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.



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 the frame of the 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 jack up, if the trailer comes loose.

Lowering Your Fish House

When lowering or raising, make sure your hands and feet are not under the fish house!

When lowering your fish house, it is recommended that you find a surface that is as flat and level as possible. You may need to lower your fish house onto blocks or spacers to accomplish this. It is also recommended that your tow vehicle be in line with your fish house. This will prevent side pressure and will allow you to remove and reinstall your pins with ease. Side pressure and uneven ground can cause pins to become pinched, making them difficult to remove and reinstall. Tongue jacks that are installed on the removable portion of the tongue can also cause excessive side pressure.

Start on the passenger's side of the fish house tongue. With the ratchet lever engaged, slightly rotate the winch handle clockwise until the top pin is loose and rotates freely. Remove the safety clip and pin. Rotate the winch handle slightly clockwise so that the ratchet lever can be easily moved counter-clockwise to disengage the ratchet. Carefully turn the winch handle counter-clockwise. **Do not lose control.** Continue rotating the winch handle until the front of the fish house has been fully lowered.

Move to the driver's side wheel assembly and ensure that the ratchet is engaged by moving the ratchet lever down (counter-clockwise). Rotate the winch handle counter-clockwise until there is no weight or pressure on the leaf spring/shackle and make sure the pin rotates freely. Remove the safety clip and pin. Rotate the winch handle slightly counter-clockwise so that the ratchet lever can be easily moved up (clockwise) to disengage the ratchet. Carefully rotate the winch handle clockwise. **Do not lose control.** Continue rotating the winch handle until the fish house is approximately half-way down. Engage ratchet by moving ratchet lever down (counter-clockwise) to the locked position and slightly moving the winch handle down (counter-clockwise) to the locked position. See *photo on page 34*.

Move to passenger's side wheel assembly. Ensure that the ratchet is engaged by moving the ratchet lever down (clockwise). Rotate the winch handle clockwise until there is no weight or pressure on the leaf spring/shackle and the pin rotates freely. Remove the safety clip and pin. Securely grip the winch handle and rotate it slightly clockwise so that the ratchet lever can be easily moved up (counter-clockwise) to disengage the ratchet. Carefully rotate the winch handle clockwise. **Do not lose control.** Continue rotating the winch handle until the fish house is on the ice.

Move back to the driver's side wheel assembly. Resume step 3 until the driver's side has been fully lowered.

If you wish to uncouple the fish house from the vehicle; remove the safety chains, unplug the trailer lights and remove the coupler (see coupler instructions).



WARNING

If you should lose control of the winch handle during the raising or lowering process DO NOT try to catch or stop the freewheeling winch handle. Serious bodily injury may occur. Allow the handle to spin freely until the fish house is completely lowered to the ground or ice.

Raising Your Fish House

When lowering or raising, make sure your hands and feet are not under the fish house!

Connect the coupler to the tow vehicle. Do not raise the front of the fish house at this point.

Move to the driver's side wheel assembly. Engage the ratchet lever by moving it down (counter-clockwise). Ensure that the cable is correctly positioned on the cable rollers. Rotate the winch handle counter-clockwise until the fish house is half-way up.

Move to the passenger's side wheel assembly. Engage the ratchet lever by moving it down (clockwise). Ensure that the cable is correctly positioned on the cable rollers. Rotate the winch handle clockwise until the holes in the shackle and leaf spring line up. Replace the pin and secure it with the safety clip. Rotate the winch handle slightly clockwise so that the ratchet lever can be easily moved up (counter-clockwise) to disengage the ratchet. Rotate the winch handle counter-clockwise until there is no weight on the cable and there is enough slack to easily pinch the cables together at a location approximately even with the leaf spring. *See photo on page 34.* **IMPORTANT**- engage the ratchet lever by moving it down (counter-clockwise). The ratchet must be engaged during towing.

Move back to the driver's side wheel assembly. Securely grip the winch handle and rotate it counter-clockwise until the holes in the shackle and leaf spring line up. Replace the pin and secure it with the safety clip. Rotate the winch handle slightly counter-clockwise so that the ratchet lever can be easily moved up (clockwise) to disengage the ratchet. Rotate the winch handle clockwise until there is no weight on the cable and there is enough slack to easily pinch the cables together at a location approximately even with the leaf spring. *See photo on page 34.* **IMPORTANT**- engage the ratchet lever by moving it down (counter clockwise). The ratchet must be engaged during towing.

Move to the passenger's side of the fish house tongue. With the ratchet engaged, rotate the winch handle clockwise until the top pin hole lines up with the pin bracket. Replace the pin and secure it with the safety clip. Rotate the winch handle slightly clockwise so that the ratchet lever can be easily moved counter-clockwise to disengage the ratchet. Rotate the handle slightly counter-clockwise to release the pressure on the cable. Engage the ratchet lever. Reconnect the safety chains and trailer lights (see coupler instructions).



WARNING

If you should lose control of the winch handle during the raising or lowering process **DO NOT** try to catch or stop the freewheeling winch handle. Serious bodily injury may occur. Allow the handle to spin freely until the fish house is completely lowered to the ground or ice.

Photo A Driver Side



Photo B Passenger Side



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 that 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 (Gross Vehicle Weight, or "GVW"). 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 "Tongue Weight" section below.

The load distribution must be such that no component part of the trailer is loaded beyond its rating. This means that you must consider the rating of the tires, wheels and axles. For tandem and triple axle trailers, you must make sure that 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 the Gross Axle Weight Rating)



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 the Gross Axle Weight Rating (GAWR). Do not load the trailer so that the weight on any tire exceeds its rating.

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 axle(s)), 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 that the trailer axle(s) do not exceed their Gross Axle Weight Rating (GAWR).

The table below 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 Hitch	Percentage
Ball Hitch (or Bumper Hitch)	10–15% for large trailers 6-10% for smaller utility and cargo trailers 5-7% for boat trailers

The numbers quoted above are for example purposes only and should be tailored to the specific trailer. For questions regarding the actual percent of tongue weight for the trailer, check with the manufacturer for specifics.

 **WARNING**

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

Make certain that the tongue weight is within 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.

Checking Tongue Weight

To check the tongue weight, the tow vehicle and trailer must be on level ground, as they will be when the trailer is being towed.

For lighter trailers the recommended method of checking tongue weight is to use an accessory called a “tongue weight scale.” If a tongue weight scale is not available from your dealer, call Yetti Fish Houses at 320.834.4940 for assistance.

An alternate method of checking tongue weight involves the use of a bathroom scale. The loaded trailer must be on a smooth and level surface, and you must block the trailer wheels, front and rear.

Bathroom Scale Method for Checking Tongue Weight

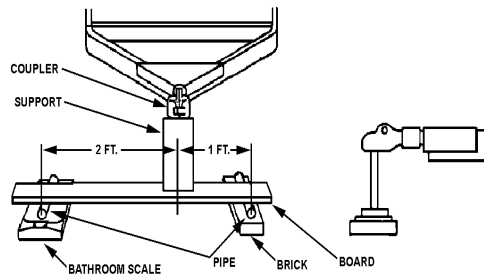
**WARNING**

An unrestrained trailer can fall off of its support, resulting in death or serious injury.

Before checking tongue weight, block trailer wheels front and rear.

Raise the tongue of the trailer with the jack.
Place a bathroom scale on the ground, directly below the coupler.
Place a strong block support (such as a cement block) on the scale – note the scale reading for the weight of the block support.
Lower the tongue until the coupler rests on the block support and the jack is $\frac{1}{2}$ inch above the ground.
The scale reading, minus the weight of the block support is the tongue weight.

If the tongue weight exceeds the capacity of a bathroom scale, you can use "leverage" to divide the tongue weight between the bathroom scale and another support (see "Checking Tongue Weight" figure).



Raise the tongue of the trailer with the jack.
Arrange a brick, 2 x 4 (or 4 x 4) board, bathroom scale and pipes as shown in "Checking Tongue Weight" figure. The brick should be about the same thickness as the bathroom scale.
Leave a 3 foot distance between the pipes, and place the coupler about 2 feet from the pipe on the bathroom scale.
Place a strong block support (such as a cement block) on the board. Note the weight indicated on the scale.
Lower the tongue until the coupler rests on the block support and the jack is $\frac{1}{2}$ inch above the ground.
Subtract the scale reading with the block and board alone from the scale reading with the trailer on the block. Multiply the result by 3 to get the actual tongue weight.

Example:

Scale reading with block and board alone = 10 lbs.

Scale reading with trailer coupler resting on board = 50 lbs.

Actual tongue weight: $(50-10) \times 3 = 120$ lbs.

For heavier trailers it is easier to go to a truck stop where there is a “certified” scale. Pull only the tow vehicle 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 the trailer on the scale. Get a “ticket”, which lists the total trailer weight. Re-connect the trailer to your tow vehicle and 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. Simple subtract the axle weight from the total weight to determine the hitch 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 weights also. If this is possible, get the tow vehicle’s front and rear axle weights to make sure they are in the same proportion as the tow vehicle alone, and that the rear axle is not overloaded. This is the best way to check that a weight distribution (or load leveling) hitch is adjusted properly, i.e., you

Securing the Cargo

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



WARNING

Shifting cargo can result in loss of control of the trailer, and can lead to death or serious injury.

Tie down all loads with proper sized fasteners, ropes, straps, etc.

Loading Cargo (Enclosed Trailer)

Couple the trailer to the tow vehicle before loading. The tongue of a bumper pull trailer can rise during loading, before the cargo is properly distributed. To measure the tongue weight, you will have to uncouple the trailer after it is loaded.

CHECKING THE TRAILER BEFORE AND DURING EACH TOW

Pre-tow Checklist

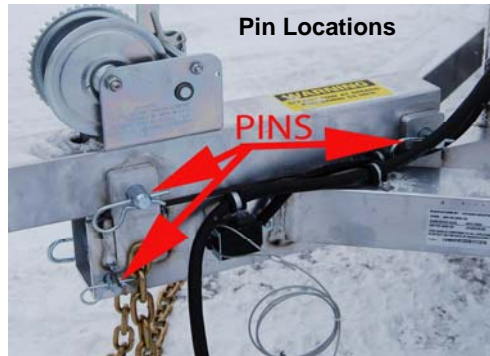
- Before towing, double-check all of these items: See page 40, “Inspection, Service & Maintenance Summary Charts,” for more information.
- Tires, wheels and lug nuts (see the “Major Hazards” section starting on page 8 of this manual)
- Tire Pressure. Inflate tire on trailer and tow vehicle to the pressure stated on the VIN / Certification label.
- Coupler secured and locked (see the “Coupling and Uncoupling the Trailer” section starting on page 30 of this manual)
- Safety chains properly rigged to tow vehicle, not to hitch or ball (see the “Coupling to the Tow Vehicle” chapter starting at Page 30 of this manual)
- Test of lights: Tail, Stop, and Turn Lights
- Test trailer brakes.
- Safety breakaway switch cable fastened to tow vehicle, not to safety chains (see the “Coupling to the Tow Vehicle” chapter starting at Page 30 of this manual)

- Cargo properly loaded, balanced and tied down (see the "Loading the Trailer" chapter starting at page 35 of this manual)
- Tongue weight and weight distribution set-up.
- Doors and gates latched and secured
- Fire extinguisher
- Flares and reflectors
- Grease pivot axels on both sides of trailer prior to each trip. Grease zerks are located on the front side of each wheel lift assembly. Use a high quality grease. Failure to grease adequately may cause the lift assembly to lock up resulting in damage of the suspension system and may hamper the processes of raising and lowering your Fish House.
- Prior to each use inspect all pins for excessive wear and/or bending. If excessive wear is noted or if the pin is bent replace the pin prior to towing your fish house. Pin locations are shown in the photo below.
- Loosen cables when towing your Yetti. Lift cables must have enough slack to allow free movement of the leaf spring assembly. See page 33-34 for instructions. Failure to follow these instructions may cause damage to your Fish House.

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



BREAKING-IN A NEW TRAILER

Retighten Lug Nuts at First 10, 25 & 50 Miles

Wheel lugs can shift and settle quickly after being first assembled, and must be checked after the **first** 10, 25 and 50 miles of driving. Failure to perform this check may result in a wheel coming loose from the trailer, causing a crash leading to death or serious injury.

See page 47-48 on Proper Touring Technique.



WARNING

Lug nuts are prone to loosen after initial installation, which can lead to death or serious injury.

Check lug nuts for tightness on a new trailer or when wheel(s) have been remounted after the first 10, 25 and 50 miles of driving.

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
Coupler and Hitch Ball	Check for cracks, pits and flats. Replace w/ ball & coupler having trailer GVW Rating. Grease. Check locking device and replace	Pages 24-28
Safety Chains and Hooks	Check for wear and damage	Pages 8 & 31
Tires	Check tire pressure when cold. Inflate as needed	Pages 18-23
Wheels - Lug Nuts(bolts) and Hub	Check for tightness; tighten. For new and remounted wheels, check torque after first 10, 25 & 50 miles of driving and after any impact.	Pages 46-48
Pivot Axels	Grease Pivot Axels on both sides of trailer prior to each use. Grease zerks are located on the front side of each wheel lift assembly. Use a high quality grease	Page 39
Pins	Pins are located on both the driver and passenger side lift assemblies as well as on the removable tongue. Prior to each use inspect all pins for excessive wear and/or bending. If excessive wear is noted or if the pin is bent replace the pin prior to towing your fish house.	Page 39
Winch Cables	See included Winch Manual	

Inspection and Service every 3 months/3,000 Miles		
Item	Inspection/Service	Manual Section Reference
Structure/hinges, doors and dividers	Inspect. Repair or replace damaged, worn or broken parts	Pages 42-43

Inspection and Service every 6 months/6,000 Miles		
Item	Inspection/Service	Manual Section Reference
Tires	Rotate @ 5,000 miles	Pages 18-23
Structure/windows	Clean dirt buildup, lubricate hinges and slides	42-43
Tires	Inspect tread and sidewalls thoroughly. Replace tire when treads are worn, when sidewall has a bulge or sidewall is worn.	Pages 18-23

Inspection and Service every 12 months/12,000 Miles		
Item	Inspection/Service	Manual Section Reference
Structure/frame members/welds	Inspect all frame members, bolts and rivets. Repair or replace damaged, worn or broken parts. Inspect all welds, repair as needed.	Pages 42-43
Wheels/Sealed & Unsealed Bearings (Hubs)/Rims	Check and confirm free running. Replace if not(sealed bearings are not serviceable). Disassemble, inspect, assemble and repack. Replace promptly if immersed in water. Inspect for cracks and dents. Replace as needed	Pages 46-48
Structure/Axel attachment/Bolts	Check by Dealer	Page 42

Inspection and Service Instructions

Axle Bolts, Frame, Suspension, & Structure



WARNING

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

Have your trailer professionally inspected annually and after any impact.



WARNING

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

TRAILER STRUCTURE

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.

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 that you know or suspect that 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

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. If not, have the welds repaired by your dealer.

Trailer Connection to Tow Vehicle

Coupler and Ball

The coupler on the trailer connects to the ball attached to the hitch on the tow vehicle. The coupler, ball and hitch transfer the towing forces between the tow vehicle and the trailer. 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 inspection and maintenance activities. If you do not have this manual, call Yeti Fish Houses at 320.834.4940 for a free copy.

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.

Landing Leg or Jack

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.

Lights and Signals

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



WARNING

Improperly operating taillights, stoplights and turn signals can cause collisions.

Check all lights before each tow.

Tires

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 that 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 build up. 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 that 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 that 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 that 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.



WARNING

Worn, damaged or under-inflated tires can cause loss of control, resulting in damage, serious injury and possibly death.

Inspect tires before each tow.

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.

Wheels, Bearings and Lug Nuts

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.

Most trailer axles are built with sealed bearings that are not serviceable. Sealed bearings must be replaced as complete units.

Unsealed Bearings (Hubs)

If your trailer has unsealed axle bearings, they must be inspected and lubricated once a year or 12,000 miles to insure safe operation of your trailer.

If a trailer wheel bearing is immersed in water, it must be replaced.

If your trailer has not been used for an extended amount of time, have the bearings inspected and packed more frequently, at least every six months and prior to use.



Follow the steps below to disassemble and service the UNSEALED wheel bearings.

After removing the grease cap, cotter pin, spindle nut and spindle washer remove the hub and drum to inspect the bearings for wear and damage. Replace bearings that have flat spots on rollers, broken roller cages, rust or pitting. Always replace bearings and cups in sets. The inner and outer bear-

ings are to be replaced at the same time.
Replace seals that have nicks, tears or wear.
Lubricate the bearings with a high quality EP-2 automotive wheel bearing grease.

Every time the wheel hub is removed and the bearings are reassembled, follow the steps below to check the wheel bearings for free running and adjust.

Turn the hub slowly, by hand, while tightening the spindle nut, until you can no longer turn the hub by hand.
Loosen the spindle nut just until you are able to turn it (the spindle nut) by hand. Do not turn the hub while the spindle nut is loose.
Put a new cotter pin through the spindle nut and axle.
Check the adjustments. Both the hub and the spindle nut should be able to move freely (the spindle nut motion will be limited by the cotter pin).

Lug Nuts (Bolts)

Being sure wheel mounting nuts (lug nuts) on trailer wheels are tight and properly torqued is an important responsibility that trailer owners and users need to be familiar with and practice. Inadequate and/or inappropriate wheel nut torque (tightness) is a major reason that lug nuts loosen in service. Loose lug nuts can rapidly lead to a wheel separation with potentially serious safety consequences.

Lug nuts are prone to loosen right after a wheel is mounted to a hub. When driving on a new or remounted wheel, check the lug nut tightness often during the first few hundred miles of the trailer's use, especially after the first 10, 25 and 50 miles of driving, before each tow, and at least twice per year thereafter.

WARNING

Lug nuts are prone to loosen after initial installation, which can lead to serious injury or death.

Check lug nuts for tightness on a new trailer or when wheel(s) have been remounted after the first 10, 25 and 50 miles of driving.

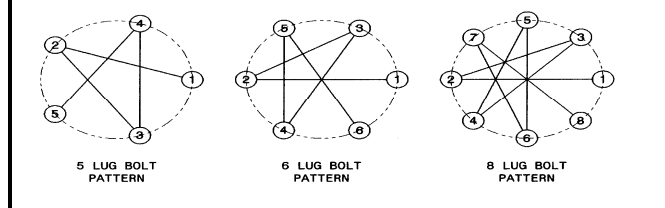
WARNING

Metal creep between the wheel rim and lug nuts will cause rim to loosen and could result in a wheel coming off, leading to death or serious injury.

Tighten lug nuts before each tow.

Tighten the lug nuts to the proper torque for the axle size on your trailer to prevent wheels from coming loose. Use a torque wrench to tighten the fasteners. The only way to be certain you have checked the torque or torqued the lug nuts to the proper torque is with a torque wrench. Four-way wrenches, ratchets, and similar tools can be useful for short-term emergency repairs, but are not appropriate tools for adequately checking lug nut torque. You must use a torque wrench to adequately indicate the torque that you are applying to the lug nut. If you do not have a torque wrench, tighten the fasteners with a lug wrench as much as you can, then have a service garage or dealer tighten the lug nuts to the proper torque. Over-tightening will result in breaking the studs or permanently deforming the mounting stud holes in the wheels.

Figure 7-1 Lug nut sequence of tightening



Keep a record of the date and approximate mileage when you check the lug nut torque. Note any lug nut that has lost torque. Investigate the reason(s) if the lug nut torque is not maintained after more than one re-torque application, because this indicates there is something wrong with the lug nuts, nut studs, wheels and/or hubs and should be corrected.

Contact your dealer or vehicle manufacturer immediately if you experience any persistent lug nut loosening or any other lug, wheel or axle problems.

In the event of a wheel separation incident, notify the vehicle manufacturer and dealer. Seek prompt professional assistance in assessing the trailer and its gear, and retain, but don't re-use involved lugs, wheels and studs. Don't repair or service the trailer yourself. Call a trained technician.

Lug Nut Torque – Steel Wheels		
Axle Rating Pounds	Stud Size	Dry Torque Foot-pounds
3,500 to 7,000	½ inch	110

Lug Nut Torque – Aluminum Wheels		
Rim Size	Stud Size	Dry Torque Foot-pounds
15 inch (5 or 6 hole)	½ inch	110

Dry Torque Foot-pounds is determined by manufacturer.

NOTES

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