

Heritage Custom 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.

Heritage Custom Trailers
10764 Industrial Park Road
Benton, IL 62812

618-439-9626 Phone
618-435-2579 Facsimile

info@heritagetrailers.com
www.heritagetrailers.com

WELCOME

Congratulations on the purchase of your new boat and *Heritage Custom Trailer*.

Heritage has been providing the best, custom-built, boat trailers on the road since 1985. By following the care and maintenance guidelines listed in this manual your *Heritage Custom Trailer* will provide years of service.

Along with this manual, you should have received supplemental manuals from some of our component manufacturers that are applicable to your particular *Heritage Custom Trailer* model. Additional manuals may include information on brakes, axles, tongue jacks, winches, couplers/brake actuators, tires, wheels, or other miscellaneous components. This manual, together with the supplemental manuals, will address most aspects of the use, care, and maintenance of your new trailer; however, it would be impossible to address every possible situation that might occur. Should you have any questions that are not addressed in this manual, or if you need replacement copies of this or any supplemental manuals, please contact your dealer or *Heritage Custom Trailers* for assistance.

Heritage Custom Trailers
10764 Industrial Park Road
Benton, IL 62812

618-439-9626 Phone
618-435-2579 Facsimile

info@heritagetrailers.com
www.heritagetrailers.com

Table of Contents

1. SAFETY INFORMATION	1
1.1. SAFETY ALERT SYMBOLS AND SIGNAL WORDS	1
1.2. MAJOR HAZARDS.....	3
1.2.1. <i>Driving Too Fast</i>	3
1.2.2. <i>Failure to Adjust Handling While Towing a Trailer</i>	3
1.2.3. <i>Trailer Not Properly Coupled to the Hitch</i>	4
1.2.4. <i>Incorrect Use of Safety Cables/Chains</i>	5
1.2.5. <i>Unsafe Brakes</i>	6
1.2.6. <i>Mismatch of Trailer and Hitch</i>	7
1.2.7. <i>Unsafe Tires, Lug Nuts, or Wheels</i>	7
1.2.8. <i>Overload</i>	10
1.2.9. <i>Unsafe Load Distribution</i>	12
1.2.10. <i>Inappropriate Cargo</i>	12
1.2.11. <i>Inoperable Brakes, Lights or Mirrors</i>	13
1.2.12. <i>Hazards From Modifying Your Trailer</i>	14
1.2.13. <i>Reporting Safety Defects</i>	14
1.2.14. <i>Safety Warning Labels on Your Trailer</i>	15
1.2.15. <i>Trailer Towing Guide</i>	15
2. TIRE SAFETY INFORMATION.....	19
2.1. DETERMINING CORRECT LOAD LIMIT – TRAILER.....	20
2.1.1. <i>Trailers 10,000 Pounds GVWR or Less</i>	21
2.1.2. <i>Trailers Over 10,000 Pounds GVWR</i>	22
2.2. DETERMINING CORRECT LOAD LIMIT – TOW VEHICLE.....	22
2.3. GLOSSARY OF TIRE TERMINOLOGY	23
2.4. TIRE SAFETY - EVERYTHING RIDES ON IT.....	28
2.5. SAFETY FIRST–BASIC TIRE MAINTENANCE	29
2.5.1. <i>Finding Your Vehicle's Recommended Tire Pressure and Load Limits</i>	29
2.5.2. <i>Understanding Tire Pressure and Load Limits</i>	29
2.5.3. <i>Checking Tire Pressure</i>	30
2.5.4. <i>Maintaining Proper Tire Pressure</i>	30
2.5.5. <i>Tire Size</i>	31
2.5.6. <i>Tire Tread</i>	32
2.5.7. <i>Tire Balance and Wheel Alignment</i>	32
2.5.8. <i>Tire Repair</i>	32
2.5.9. <i>Tire Fundamentals</i>	32
2.6. TIRE SAFETY TIPS	37

Table of Contents

3. COUPLING TO THE TOW VEHICLE	39
3.1. USE AN ADEQUATE TOW VEHICLE AND HITCH	39
3.2. COUPLING AND UNCOUPLING THE TRAILER	41
3.3. TRAILER WITH BALL-HITCH COUPLER	42
3.3.1. <i>Before Coupling the Trailer to the Tow Vehicle</i>	42
3.3.2. <i>Prepare the Coupler and Hitch</i>	44
3.3.3. <i>Couple the Trailer to the Tow Vehicle</i>	44
3.3.4. <i>Rig the Safety Cables/Chains</i>	45
3.3.5. <i>Connecting Brake Systems</i>	47
3.3.6. <i>Connect the Electrical Plug</i>	49
3.3.7. <i>Uncoupling the Ball Hitch Trailer with Tongue Jack</i>	51
4. LOADING THE TRAILER	53
4.1. BOAT PLACEMENT	56
4.1.1. <i>Proper Boat Position</i>	56
4.1.2. <i>Winch Post Position</i>	56
4.2. SECURING THE BOAT	57
4.2.1. <i>Winch Straps</i>	57
4.2.2. <i>Bow Safety Tie-downs</i>	57
4.2.3. <i>Transom Tie-downs</i>	57
4.3. LAUNCHING AND LOADING GUIDELINES	58
4.3.1. <i>Launching the Boat</i>	58
4.3.2. <i>Loading the Boat</i>	58
5. CHECKING THE TRAILER BEFORE AND DURING EACH TOW	61
5.1. PRE-TOW CHECKLIST	61
5.2. MAKE REGULAR STOPS	61
6. BREAKING-IN A NEW TRAILER	63
6.1. RETIGHTEN LUG NUTS AT FIRST 10, 25 & 50 MILES	63
6.2. ADJUST BRAKE SHOES	63
6.3. SYNCHRONIZING THE BRAKE SYSTEMS	64
7. ACCESSORIES	65
7.1. ACCESSORY BATTERY	65
7.2. ELECTRIC-POWERED LANDING GEAR	65

Table of Contents

8. INSPECTION, SERVICE, AND MAINTENANCE	67
8.1. INSPECTION AND SERVICE INSTRUCTIONS	71
8.1.1. Axle Bolts, Frame, Suspension, & Structure.....	71
8.1.2. Trailer Brakes.....	72
8.1.3. Trailer Connection to Tow Vehicle.....	75
8.1.4. Landing Leg or Jack.....	75
8.1.5. Lights and Signals	75
8.1.6. Tires.....	76
8.1.7. Wheels	76
8.1.8. Bearings.....	77
8.1.9. Lug Nuts (Bolts).....	77
8.2. CARE AND CLEANING	80
8.2.1. Cleaning	80
8.2.2. Care of Chrome Wheels.....	80
8.2.3. Care of Painted Surfaces.....	80

Safety Information

1. SAFETY INFORMATION

1.1. SAFETY ALERT SYMBOLS AND SIGNAL WORDS

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:

- ◆ Driving too fast for the conditions (maximum speed when towing a trailer is 60 m.p.h.).
- ◆ Overloading the trailer or loading the trailer unevenly.
- ◆ Trailer improperly coupled to the hitch.
- ◆ Inadequate tow vehicle or towing hitch.
- ◆ Inadequate brakes on trailer.
- ◆ Brake failure.
- ◆ Not maintaining proper tire pressure.
- ◆ Not keeping lug nuts tight.
- ◆ Not properly maintaining the trailer structure.

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.

Trailer Components

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, contact your dealer or **Heritage Custom Trailers** at 618-439-9626 or info@heritagetrailers.com for a free copy.

If any of the safety warning stickers on your trailer become illegible or you need an additional copy of this manual, contact your dealer or **Heritage Custom Trailers** for free replacements.

Safety Information

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 that WILL result in severe, personal injury or death if the warning is ignored.

^ WARNING

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

^ Caution

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

^ Notice

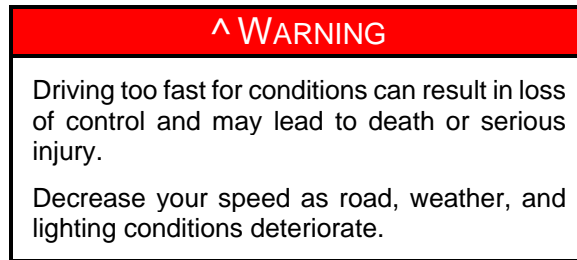
NOTICE – Practices that could result in damage to the trailer or other property.

Safety Information

1.2. MAJOR HAZARDS

1.2.1. Driving Too Fast

With ideal road conditions, the maximum speed when safely towing a trailer is 60 m.p.h. As your speed increases, you are more likely to suddenly lose control. Never exceed 60 m.p.h. while towing the trailer.



1.2.2. Failure to Adjust Handling While 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). In addition, you will need a longer distance to pass due to slower acceleration and increased length.

- ◆ 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 is the trailer reaction to the air pressure wave caused by passing trucks and busses. Continued pulling of the trailer provides a stabilizing force to correct swaying. Do not apply the brakes to correct trailer swaying.
- ◆ Check rearview mirrors frequently to observe the trailer and traffic.
- ◆ Use lower gears when driving down steep or long grades. Use the engine and transmission as a brake. Do not ride the brakes because they can overheat and become ineffective.

Safety Information

- ◆ Be aware of your combined trailer/boat height, especially around trees and when approaching roofed areas.

1.2.3. Trailer Not Properly Coupled to the Hitch

It is critical that the trailer be securely coupled to the hitch, and the safety cables/chains be correctly attached. Uncoupling may result in death or serious injury.

^ 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.

Safety Information

^ 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 cables/chains are secured to the tow vehicle.
- The trailer jack is fully retracted.

Do not tow the trailer on the road until:

- Tires, wheels, and lug nuts are checked.
- The trailer brakes are checked.
- The breakaway cable is connected to the tow vehicle.
- The boat is secured to the trailer.
- The trailer lights are connected and checked.

1.2.4. Incorrect Use of Safety Cables/Chains

Your *Heritage Custom Trailer* is equipped with safety cables/chains so that, in the unlikely event that the trailer comes loose from the hitch for any reason, control of the trailer can still be maintained.

Safety Information

^ WARNING

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

1.2.5. Unsafe Brakes

Trailer brakes should be inspected at least annually or before long trips to ensure everything is in proper working order. The inspection should include the pads or shoes, hydraulic fluid level, electrical connections, and the breakaway cable.

^ WARNING

Ineffective or inoperative brakes can lead to a serious accident resulting in death or serious injury.

Safety Information

1.2.6. Mismatch of Trailer and Hitch

^ Danger
<p>Use of a hitch with a load rating less than the load rating of the trailer can result in loss of control, which can lead to death or serious injury.</p> <p>Use of a tow vehicle with a towing capacity less than the load rating of the trailer can result in loss of control, which can lead to death or serious injury.</p> <p>Be sure your hitch and tow vehicle are rated for the Gross Vehicle Weight Rating of your trailer.</p>

1.2.7. Unsafe Tires, Lug Nuts, or Wheels

Trailer tires and wheels are more likely to fail than car tires and wheels because they carry a heavier load. Therefore, it is essential to inspect the trailer tires before each tow.

If a tire is cracked or has a bald spot, bulge, cuts, or any cords showing, 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 tracking on wet roadways and can result in loss of control, leading to death or serious injury.

Safety Information

Improper tire pressure causes an unstable trailer and can result in a tire blowout and loss of control. Therefore, before each tow you must check the tire pressure. Tire pressure must be checked when tires are cold. Allow three hours cool-down after driving as much as one mile at 40 m.p.h. before checking tire pressure. NOTE: Trailer tires usually require higher pressures than passenger vehicle tires.

For more information on tire terminology, safety, and maintenance, see Chapter 2 beginning on page 19. In addition, this information may be downloaded by going to: (http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html) and clicking on the “brochure” file.

^ WARNING

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

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

Since trailer wheels and lug nuts (or bolts) are subjected to greater side loads than automobile wheels, they are more prone to loosen. Before each tow, check to make sure they are tight.

^ WARNING

Metal creep between the wheel and axle hub may cause the lug nuts to loosen which could cause a wheel to separate from the trailer causing death or serious injury.

Check the lug nuts for tightness before each tow.

Safety Information

The proper tightness (torque) for lug nuts is listed in Section 8.1.9 starting on page 77 in the “Inspection Service , and Maintenance” chapter of this manual. Use a torque wrench to tighten the lug nuts. If you do not have a torque wrench, use a lug wrench and tighten the nuts as much as you can. Then 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 pulling a new trailer (or after wheels have been remounted), check to make sure lug nuts 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 parting 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 to separate from the trailer, leading to death or serious injury.

Be sure lug nuts are tight before each tow.

Safety Information

1.2.8. Overload

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 Gross Vehicle Weight Rating (GVWR) of the trailer. If you do not know the empty weight of the trailer, you may contact ***Heritage Custom Trailers*** or weigh the empty trailer at a commercial scale. In addition, you must distribute the load on the trailer so that the load on any tire or axle does not exceed the tire load rating or the Gross Axle Weight Rating (GAWR).

DETERMINING CORRECT LOAD LIMIT – TRAILER (FOR TRAILERS 10,000 LBS. GVWR OR LESS):

- ◆ Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs,” on the trailer placard.
- ◆ This figure equals the amount of cargo and luggage load capacity.
- ◆ Determine the combined weight of luggage and cargo being loaded on the trailer. That weight may not safely exceed the available cargo and luggage load capacity.

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

DETERMINING CORRECT LOAD LIMIT – TRAILER (FOR TRAILERS OVER 10,000 LBS. GVWR):

- ◆ 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.
- ◆ Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer’s VIN (Certification) label.
- ◆ 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.

Safety Information

DETERMINING CORRECT LOAD LIMIT – TOW VEHICLE (FOR TOW VEHICLES 10,000 LBS. GVWR OR LESS):

- ◆ Locate the statement, “The combined weight of occupants and cargo should never exceed XXX lbs,” on the vehicle 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 (5x150) = 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 above.
- ◆ 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.

^ WARNING

An overloaded trailer can result in loss of control of the trailer, which may lead to death or serious injury.

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

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

Safety Information

Your *Heritage Custom Trailer* was designed and built to carry a specific boat brand, size, and model based on the boat manufacturer's estimated dry weight plus the fuel and water capacity. Most boat manufacturers do not include any allowance for optional equipment, propulsion upgrades, or batteries in their estimated weights. You are responsible for verifying that the GVWR of the trailer is sufficient to carry the boat including any factory upgrades purchased and any additional fishing, skiing, and/or overnight gear that may be stored in the boat while it is being towed.

^ WARNING

Verify that the GVWR of your trailer is sufficient to carry the boat including any factory upgrades purchased and any additional gear that may be stored in the boat while it is being towed.

1.2.9. Unsafe Load Distribution

Uneven load distribution can cause tire, wheel, axle, or structural failure. Be sure your trailer is properly loaded.

Proper weight distribution is equal, right to left, and creates a tongue weight that is in the proper range for stable trailer handling. For tandem and triple axle trailers, it is necessary to know or check that no axle is overloaded. For more information regarding tongue weight, see Chapter 4 beginning on page 53.

1.2.10. Inappropriate Cargo

Your trailer is specifically fitted for a particular boat brand, size, and model. Contact your dealer or *Heritage Custom Trailers* before using your trailer with any boat other than the one it was designed to haul.

Safety Information

^ WARNING

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

Exceptions:

- Fuel in the tanks of boats that are being hauled.
- Fuel stored in the tank of an on-board generator.

1.2.11. Inoperable Brakes, Lights or Mirrors

Be sure that the lights on your trailer are functioning properly before towing your trailer. Lights on a trailer are controlled via a connection to the tow vehicle, generally a multi-pin electrical connector. Check the trailer taillights by turning on your tow vehicle lights. Check the trailer brake lights by having someone step on the tow vehicle brake pedal while you look at the trailer lights. Do the same thing to check the turn signal lights.

^ WARNING

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

Before each tow:

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

Safety Information

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.

1.2.12. Hazards From Modifying Your Trailer

Essential safety items can be damaged by altering your trailer. Before making any alteration to your trailer, contact your dealer or ***Heritage Custom Trailers*** and describe the alteration you are contemplating. Alteration of the trailer structure or modification of mechanical, electrical, or other systems on your trailer must be performed only by qualified technicians who are familiar with the system as installed on your trailer.

1.2.13. Reporting Safety Defects

If you believe that your trailer 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 us.

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington D.C. area) or write to: NHTSA, U.S. Department of Transportation, 400 Seventh St. SW, Washington, DC 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

You may contact ***Heritage Custom Trailers*** at 618-439-9626 or info@heritagetrailers.com.

Safety Information

1.2.14. Safety Warning Labels on Your Trailer

Safety warning labels are located at the front of the trailer on the inside of the starboard frame rail near the VIN (Certification) label, and on the coupler or brake actuator. Safety warning labels cannot be applied to cover every component and towing application, so it is important to read and understand this manual and supplemental manuals to help avoid misuse or abuse of your trailer.



1.2.15. 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. When towing a trailer it takes longer to get up to speed. In addition, you need more room to turn and pass, and more distance to stop. 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.

Safety Information

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 m.p.h. 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.

Most boat trailers are equipped with hydraulic surge brakes. For information on these systems refer to the owner's manual provided by the axle manufacturer. If your trailer is equipped with electric brakes or electric over hydraulic brakes, try using different combinations of trailer/electric brake and tow vehicle brake from speeds no greater than 10 m.p.h. 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.

Safety Information

Safe Trailer Towing Guidelines

- ◆ Check the load tie-downs to make sure the load will not shift during towing.
- ◆ Check coupling, safety cable/chain, tires, wheels, and lights.
- ◆ Check the lug nuts or bolts for tightness.
- ◆ If equipped with electric brakes or electric over hydraulic brakes, adjust the brake controller to engage the trailer brakes before the tow vehicle brakes. Your dealer can assist you by making this adjustment.
- ◆ 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. Never drive faster than 60 m.p.h.
- ◆ Allow plenty of room for passing. A rule of thumb is that the passing distance with a trailer is four 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 overheat and stop working, potentially leading to a runaway tow vehicle and trailer.
- ◆ To conserve fuel, do not 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 and power through the curve. This way, the towing vehicle remains “in charge.”
- ◆ Do not apply the brakes to correct extreme trailer swaying. Continued pulling of the trailer, and even slight acceleration, will provide a stabilizing force.
- ◆ 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 cables/chains.
 - There is appropriate slack in the breakaway cable.
 - The tires are not visibly low on pressure.
 - The boat and the load are secure.

Safety Information

Tire Safety Information

2. TIRE SAFETY INFORMATION

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

Section 2.1 contains "Determining Correct Load Limit - Trailer".

Section 2.2 contains "Determining Correct Load Limit – Tow Vehicle".

Section 2.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other non-technical terms.

Section 2.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It".

This brochure, as well as the preceding subsections, 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 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 Chapter 3 beginning on page 39.
 - Determining compatibility of tire and vehicle load capabilities.
 - Adverse safety consequences of overloading on handling and stopping on tires.

Tire Safety Information

2.1. 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 trailers there is a Federal certification/VIN label that is 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.

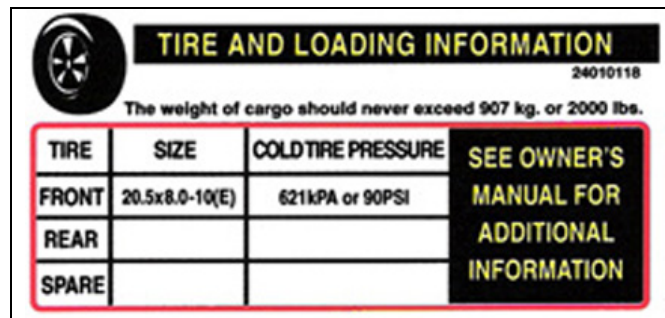
For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your 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, or hitch and total weight.

Tire Safety Information

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.

2.1.1. Trailers 10,000 Pounds GVWR or Less



The image shows a placard with a tire icon on the left. The title is "TIRE AND LOADING INFORMATION" with the number "24010118" to its right. Below the title is the text "The weight of cargo should never exceed 907 kg. or 2000 lbs." The placard contains a table with three columns: "TIRE", "SIZE", and "COLD TIRE PRESSURE". The rows are "FRONT", "REAR", and "SPARE". The "FRONT" row has "20.5x8.0-10(E)" under "SIZE" and "621kPA or 90PSI" under "COLD TIRE PRESSURE". To the right of the table is a black box with white text that reads "SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION".

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	20.5x8.0-10(E)	621kPA or 90PSI	
REAR			
SPARE			

Tire and Loading Information Placard – Figure 2-1

- ◆ Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs,” on the trailer placard. See figure 2-1.
- ◆ This figure equals the available amount of cargo and luggage load capacity.
- ◆ Determine the combined weight of luggage and cargo being loaded on the trailer. That weight may not safely exceed the available cargo and luggage load capacity.

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

Tire Safety Information

2.1.2. Trailers Over 10,000 Pounds GVWR

(Note: These trailers are not required to have a tire information placard on the vehicle.)

- ◆ 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.
- ◆ Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
- ◆ 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.

2.2. 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 above.

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 Information

2.3. GLOSSARY OF TIRE TERMINOLOGY

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

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

Bead separation: This is the breakdown of the bond between components in the bead.

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

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

Chunking: The breaking away of pieces of the tread or sidewall.

Cold inflation pressure: The pressure in the tire before you drive.

Cord: The strands forming the plies in the tire.

Cord separation: The parting of cords from adjacent rubber compounds.

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

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

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

Tire Safety Information

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 (GAWR): 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 (GVWR): 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 that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire: A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating: The maximum load that a tire is rated to carry for a given inflation pressure.

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

Tire Safety Information

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.

Pin weight: The downward force applied to the 5th wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

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

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

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

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

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

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

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

Outer diameter: The overall diameter of an inflated new tire.

Tire Safety Information

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.

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.

Tire Safety Information

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.

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.

Tire Safety Information

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.

2.4. 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.

Tire Safety Information

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.

2.5. SAFETY FIRST—BASIC TIRE MAINTENANCE

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

2.5.1. 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.

2.5.2. 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.)

Tire Safety Information

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.

2.5.3. 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.

2.5.4. Maintaining Proper Tire Pressure

- ◆ Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- ◆ Record the tire pressure of all tires.

Tire Safety Information

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

2.5.5. 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 Safety Information

2.5.6. 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.

2.5.7. Tire Balance and Wheel Alignment

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

2.5.8. 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.

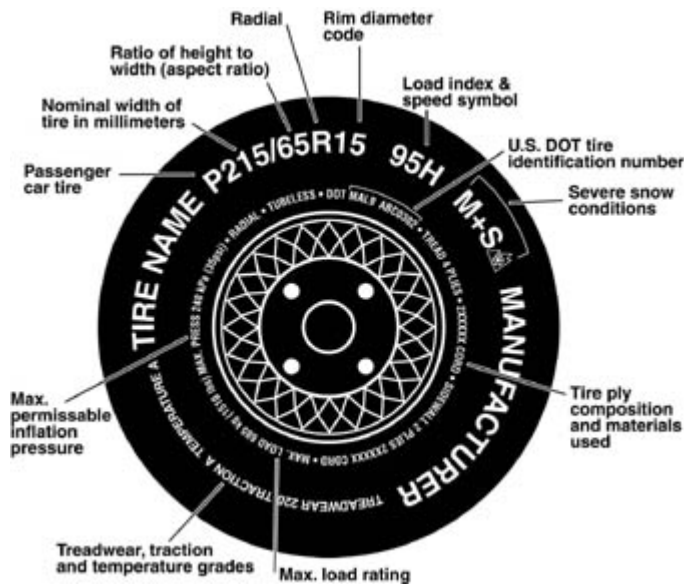
2.5.9. Tire Fundamentals

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.

Tire Safety Information

2.5.9.1. 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.

Tire Safety Information

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

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

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

Tire Safety Information

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.

2.5.9.2. 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 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",

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".

Tire Safety Information

2.6. 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.

Tire Safety Information

Coupling to the Tow Vehicle

3. COUPLING TO THE TOW VEHICLE

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

3.1. 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 GVWR of the trailer is less than or equal to the rated towing capacity of the tow vehicle. 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 that of the trailer.

^ Danger

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

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

The trailer VIN (Certification) label is located on the inside of the starboard frame rail near the front of your trailer. The trailer VIN (Certification) label contains the following critical safety information for the use of your trailer.

Coupling to the Tow Vehicle

GAWR: The maximum gross weight that an axle can support. It is the lowest of axle, wheel, or tire rating. Usually, the tire or wheel rating is lower than the axle rating and determines GAWR.

GVWR: 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 on it (such as the boat with fuel and other supplies). GVWR is sometimes referred to as GTWR (Gross Trailer Weight Rating), or MGTW (Maximum Gross Trailer Weight). GVWR, GTWR and MGTW are all the same rating.

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 to be 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.

PSIC: The tire pressure (Pounds per Square Inch) measured when Cold.

VIN: The Vehicle Identification Number.

Date of manufacture: The month and year the trailer was manufactured.

Tire size: The size of tire fitted for this trailer.

Rim size: The size of rim fitted for this trailer.

Type of trailer: *Heritage Custom Trailer* model number designation.

Empty weight: Some information that comes with the trailer (such as the Manufacturer's Statement of Origin) is not a reliable source for "empty" or "net" weight. The shipping documents list average or standard weights and your trailer may be equipped with options. To determine the "empty" or "net" weight of your trailer, weigh it on an axle scale. To find the weight of the trailer using an axle scale, you must know the axle weights of your tow vehicle **without** the trailer coupled. Some of the trailer weight will be transferred from the trailer to the tow vehicle axles and an axle scale weighs all axles, including the tow vehicle axles.

Coupling to the Tow Vehicle

3.2. COUPLING AND UNCOUPLING THE TRAILER

Trailers are produced with a variety of coupler devices. See the owner's manual provided for the specific coupling device installed on your *Heritage Custom Trailer*. If you don't have a copy of the owner's manual, contact your dealer or *Heritage Custom Trailers* at 618-439-9626 or info@heritagetrailers.com for a free copy.

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:

Coupler: A device on the tongue of the trailer that connects to the hitch on the tow vehicle.

Hitch: A device on the tow vehicle that supports the weight of the trailer tongue and pulls the trailer. The coupler attaches to the hitch.

Safety cables/chains: If the coupler connection comes loose, the safety cables/chains can keep the trailer attached to the tow vehicle. With properly rigged safety cables/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 an electric braking system or an electric over hydraulic system, the electrical connector will also supply power to the brakes from the tow vehicle.

On trailers equipped with hydraulic brakes, the electrical connector will automatically activate a bypass solenoid on the trailer when the tow vehicle is put into reverse, allowing the trailer to be backed up. For information on this system, refer to the supplemental manual provided by the manufacturer.

Breakaway cable: Trailers with brakes, whether hydraulic, electric over hydraulic, or electric, are equipped with a breakaway cable. A properly rigged breakaway cable will activate the trailer brakes should the trailer come uncoupled from the tow vehicle.

Coupling to the Tow Vehicle

Jack: A device on the trailer that is used to raise and lower the coupler. The jack is sometimes called the “landing gear.”

3.3. TRAILER WITH BALL-HITCH COUPLER

Heritage Custom Trailers are equipped with a 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.”

The load rating of the coupler and the necessary ball size are listed on the trailer coupler. You must provide a hitch and ball for your tow vehicle with a load rating that 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, which can lead to death or serious injury.

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

THE HITCH BALL MUST 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.

3.3.1. Before Coupling the Trailer to the Tow Vehicle

Be sure the size and rating of the 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, which can lead to death or serious injury.

Be sure the LOAD RATING of the hitch ball is equal to 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, inspect it visually, and feel for flat spots, cracks, and pits.

^ WARNING

A worn, cracked, or corroded hitch ball can fail while towing, which can lead to 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 properly secured to the tongue of the trailer. All coupler fasteners must be visibly solid against the trailer frame.

Coupling to the Tow Vehicle

^ WARNING

A loose hitch-ball nut can result in uncoupling, which can lead to death or serious injury.

Be sure the hitch ball is secured to the hitch before coupling the trailer.

- ◆ Use the jack to raise the bottom surface of the coupler to be above the top of the hitch ball.

3.3.2. Prepare the Coupler and Hitch

- ◆ Lubricate the hitch ball and the inside of the coupler with a thin layer of automotive bearing grease.
- ◆ Using the trailer jack, raise the coupler height above the ball height.
- ◆ Open the coupler locking mechanism. Ball couplers have a locking mechanism with an internal moving piece and an outside handle. There are many different styles of ball couplers. Consult the owner's manual provided by the coupler manufacturer for specific operating procedures for the ball coupler installed on your *Heritage Custom Trailer*.
 - 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.

3.3.3. Couple the Trailer to the Tow Vehicle

- ◆ Lower the trailer 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 jack to raise the rear of the tow vehicle.

Coupling to the Tow Vehicle

- ◆ Using the trailer jack, test to see that you can raise the rear of the tow vehicle by one inch, after the coupler is locked to the hitch.

Heritage Custom Trailers are 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.

^ Notice

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

If the coupler cannot be secured to the hitch ball, do not tow the trailer. Contact your dealer or ***Heritage Custom Trailers***.

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

3.3.4. Rig the Safety Cables/Chains

Your ***Heritage Custom Trailer*** is equipped with safety cables as standard equipment; however, check the laws in your state to verify that cables are allowed as a substitute for safety chains.

- ◆ Visually inspect the safety cables/chains and hooks for wear or damage. Replace worn or damaged safety cables/chains and hooks before towing.
- ◆ Rig the safety cables/chains so that they:
 - Cross underneath the coupler.
 - 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).
 - Have enough slack to permit tight turns, but short enough so if the trailer uncouples, the safety cables/chains can hold the tongue up above the road.

Coupling to the Tow Vehicle

^ WARNING

If the trailer uncouples from the tow vehicle, improper rigging of the safety cables/chains may lead to loss of control of the trailer and tow vehicle, which can lead to death or serious injury if the trailer uncouples from the tow vehicle.

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

^ Notice

Heritage Custom Trailers cannot provide cables/chains that are the proper length to accommodate the infinite number of vehicle, hitch, and receiver combinations. You may need to make a change in one or more of the involved components to achieve a length suitable to hold the trailer tongue above the road.

Coupling to the Tow Vehicle

3.3.5. Connecting Brake Systems

Heritage Custom Trailers uses one of three brake systems: Electric, Hydraulic, or Electric over Hydraulic. Federal law requires trailers with brakes to have a breakaway brake system that activates the trailer brakes, to prevent a runaway trailer, if the trailer uncouples from the tow vehicle. All breakaway brake systems have a cable/chain that connects to the tow vehicle separate from the safety cables/chains. Read and follow the instructions here in this manual as well as the instructions that have been prepared by the brake component manufacturers for the brake system installed on your trailer. If you do not have these instructions, contact your dealer or *Heritage Custom Trailers* for a free copy.

^ WARNING

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

Connect the breakaway cable to the tow vehicle: NOT to the hitch, ball, or support.

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

Coupling to the Tow Vehicle

3.3.5.1. Electric Brake Systems

Trailers equipped with electric brakes include a battery, a breakaway switch with a pullpin, and a vehicle-mounted brake controller. The breakaway switch is mounted on the trailer and connects to the tow vehicle using a wire cable. The cable has to be attached to the vehicle at a point that is not adjustable or interchangeable and must be short enough to be pulled, activating the breakaway brake before the slack is taken out of the safety cables/chains. When the breakaway cable is pulled, it breaks the electrical connection in the switch and causes the breakaway battery to activate the trailer brakes preventing a runaway trailer. The brake system may be fitted with a charger that draws power 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 to keep the breakaway brake system in working order. The breakaway brake system battery discharges rapidly when the breakaway system is actuated.

3.3.5.2. Hydraulic “Surge” Brake Systems

For trailers equipped with hydraulic surge brakes, the breakaway cable manually applies pressure to the brake system when the cable has been pulled. Connect the breakaway cable to the tow vehicle so that it will be pulled out before all of the slack in the safety cables/chains is taken up. Do **not** connect the breakaway cable to a safety chain, or to the hitch ball or hitch ball assembly. This would keep the breakaway brake system from operating when it is needed. For more information, refer to the instruction manual provided by the manufacturer of the brake actuator on your particular model of trailer. If you do not have these instructions, contact your dealer or *Heritage Custom Trailers* for a free copy.

Coupling to the Tow Vehicle

3.3.5.3. Electric over Hydraulic Brake Systems

Trailers with electric over hydraulic brakes have the same coupler and breakaway configuration as trailers with standard electric brakes (see Section 3.3.5.1 starting on page 48). The breakaway cable has to be attached to the vehicle at a point which is not adjustable or interchangeable and must be short enough to be pulled, activating the breakaway brake before the slack is taken out of the safety cables/chains. When the breakaway cable is pulled and breaks the electrical connection in the switch, the breakaway battery activates the hydraulic pump that pressurizes the trailer brake system preventing a run-away trailer. The brake system may be fitted with a charger that draws power 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 to keep the breakaway brake system in working order. The breakaway brake system battery discharges rapidly when the breakaway system is actuated.

3.3.6. **Connect the Electrical Plug**

Heritage Custom Trailers use one of three different electrical plugs to control the lights and braking functions on your trailer.

- 1) Trailers without brakes use a flat four-way plug.
 - 2) Trailers with hydraulic brakes use a flat five-way plug.
 - 3) Trailers with electric or electric over hydraulic brakes use a round seven-way plug.
- ◆ Check all lights for proper operation:
 - Clearance and Running Lights (Turn on tow vehicle headlights).
 - Brake Lights (Step on tow vehicle brake pedal.)
 - Turn Signals (Operate tow vehicle directional signal lever.)
 - ◆ Check electric brakes for proper operation, if your trailer is equipped with electric 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, if so equipped, and can lead to collision.

Before each tow:

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

3.3.6.1. Four-way Electrical Plug

Four-way electrical plugs are used on trailers without brakes: they use three wires to control the lights and one as a ground wire.

- 1) The white wire is the ground wire.
- 2) The brown wire controls the running lights.
- 3) The green wire controls the right turn/right brake light.
- 4) The yellow wire controls the left turn/left brake light.

3.3.6.2. Five-way Electrical Plug

Five-way electrical plugs are used on trailers with hydraulic brakes: they use three wires to control the lights, one as a ground wire and one which connects the tow vehicle back-up lights to a by-pass solenoid on the trailer brakes allowing it to be backed up when the tow vehicle is put in reverse.

- 1) The white wire is the ground wire.
- 2) The brown wire controls the running lights.
- 3) The green wire controls the right turn/right brake light.
- 4) The yellow wire controls the left turn/left brake light.
- 5) The red wire controls the by-pass solenoid on the trailer brakes.

Coupling to the Tow Vehicle

The diagram (Figure 3-1 Wiring Diagram) at the end of this section shows the typical four-way or five-way wiring for a trailer without brakes. Trailers with hydraulic brakes are wired the same but have a red auxiliary wire that connects to the tow vehicle back up lights.

3.3.6.3. Seven-way Electrical Plug

Seven-way electrical plugs are used on trailers equipped with electric brakes or electric over hydraulic brakes. Each trailer brake system requires a slightly different wiring configuration. For more details on trailers wired for electric or electric over hydraulic brakes, contact your dealer or *Heritage Custom Trailers*.

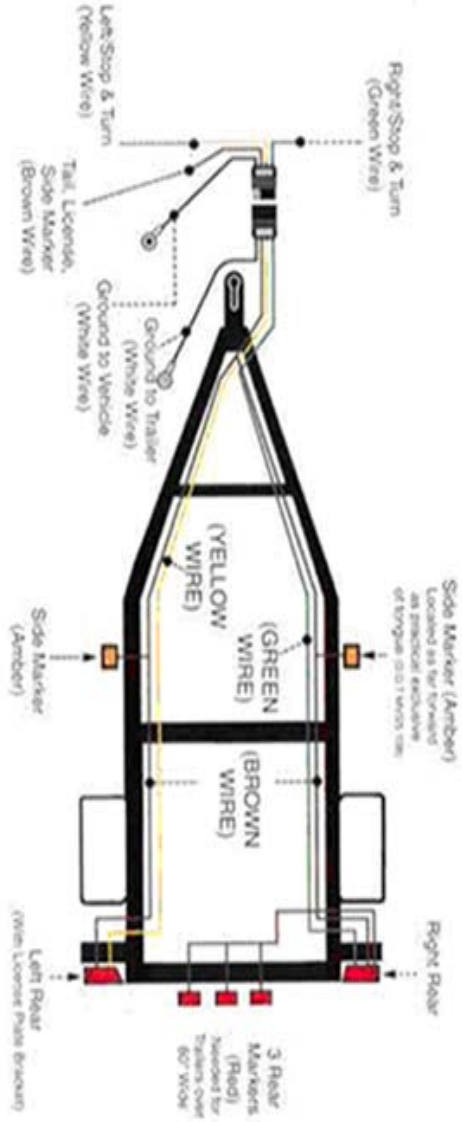
3.3.7. Uncoupling the Ball Hitch Trailer with Tongue Jack

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 breakaway brake cable.
- ◆ Disconnect the safety cables/chains from the tow vehicle.
- ◆ Unlock the coupler and open it.
- ◆ Before extending the jack, make certain the ground surface below the jack 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.

Coupling to the Tow Vehicle

Fig 3-1 Wiring Diagram



Loading the Trailer

4. LOADING THE TRAILER

To safely load a trailer, you must consider:

- ◆ Overall load weight.
- ◆ Load weight distribution.
- ◆ Proper tongue weight.
- ◆ In addition, you must properly secure the boat and any cargo.

To determine that you have properly loaded the trailer, you must consider the *distribution* of weight, as well as the total weight of the trailer and its load. The trailer axles carry most of the total weight of the trailer, the boat and the contents (Gross Vehicle Weight or GVW). The remainder of the total weight is carried by the tow vehicle hitch. For safe towing, the trailer tongue and tow vehicle hitch must carry the proper amount of the loaded trailer weight; otherwise, the trailer can sway wildly at towing speed. Read the “Tongue Weight” section that follows.

The load distribution must be such that no component part of the trailer is loaded beyond the rated capacity. This means that you must consider the rating of the tires, wheels, and axles. In addition, you must consider the GVWR and tongue weight rating of the coupler/brake actuator. These ratings may be found on the coupler/brake actuator. For more information, refer to the owner’s manual provided by the coupler/brake actuator manufacturer. If you do not have this manual, contact your dealer or ***Heritage Custom Trailers*** for a free copy.

For tandem and triple axle trailers, you must make sure that the front-to-rear load distribution does not result in overloading any axle. Trailers equipped with torsion axles are more sensitive to front-to-rear weight distribution because they lack the equalization characteristics that a spring axle set-up provides. All trailers should be towed with the trailer frame parallel to the road surface, particularly those with torsion axles.

Towing stability also depends on keeping the center of gravity as low as possible. 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 load must never exceed the total weight rating of the trailer (Gross Vehicle Weight Rating or GVWR).

Loading the Trailer

^ WARNING

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

Do not load a trailer so that the weight on any tire exceeds the load capacity rating.

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

Tongue Weight

A portion of the trailer load must be carried by the tow vehicle. That is, the trailer tongue must exert a downward force on the tow vehicle hitch, most commonly referred to as tongue weight. If the tongue weight is too light or too heavy, the tow vehicle may not be able to maintain control of the tow vehicle/trailer combination. The hazards of improper tongue weight include loss of steering control, loss of traction, trailer sway, increased stopping distances, and possible overload of the tow vehicle hitch/receiver or trailer coupler and axle(s).

In the following table, the second column notes the rule-of-thumb percentage of total weight of the trailer plus the cargo (Gross Vehicle Weight or GVW) that should appear on the tongue of the trailer. For example, a trailer with a ball hitch, with a loaded weight of 12,000 pounds, should have 10-15% of the 12,000 pounds on the tongue. That is, the example trailer would have 1,200 to 1,800 pounds on the tongue.

Loading the Trailer

Tongue Weight as a Percentage of Loaded Trailer Weight	
Type of Hitch	Percentage
Ball Hitch (or Bumper Hitch)	10-15%
Gooseneck Hitch	20-25%
Fifth Wheel Hitch	

^ WARNING

Improper tongue weight (load distribution) can result in loss of control of the trailer, which can lead 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.

Loading the Trailer

4.1. BOAT PLACEMENT

4.1.1. Proper Boat Position

Your *Heritage Custom Trailer* is built to fit the particular boat brand, make, and model you purchased. The selling dealer should have the boat properly placed on the trailer when you take delivery. As a rule, the transom (rear of the boat) should be flush with the back of the bunk boards. In most cases, the boat can be moved forward or backward slightly in order to make minor adjustments to the tongue weight of the trailer. Make sure that your tow vehicle and hitch are properly rated for the GVW and tongue weight of the boat and trailer combination. Never allow the tongue weight to exceed or fall below the guidelines referenced elsewhere in this chapter.

^ WARNING

Failure to maintain proper tongue weight may cause the trailer or tow vehicle to lose traction or control, which can lead to serious injury or even death.

4.1.2. Winch Post Position

The winch post, sometimes referred to as the bow stop, should be properly placed on the trailer when you take delivery. Most winch posts are designed with a single bow roller that should be located just above the bow eye on the boat. The boat is secured by routing the winch strap and hook under the roller and attaching it to the bow eye. When transporting the boat, the bow (front of the boat) should remain in firm contact with the bow roller on the trailer at all times.

Loading the Trailer

4.2. SECURING THE BOAT

4.2.1. Winch Straps

The winch strap is used for pulling the boat tight against the trailer bow roller. Failure to keep the boat firmly against the trailer bow roller while it is in tow can create unsafe driving conditions and cause damage to the boat and the trailer.

^ WARNING

Failure to keep the boat firmly against the trailer bow roller while it is in tow can create unsafe driving conditions and cause damage to the boat and trailer.

4.2.2. Bow Safety Tie-downs

Some state laws require a bow (front) safety tie-down to be used in conjunction with the winch strap. Check the laws in your state to see if this applies to your trailer. In most states the bow safety tie-down can be a cable, chain, or strap that is attached to the trailer using a fastener other than the ones used to hold the winch in place. The winch post on all *Heritage Custom Trailers* has a hole for attaching a bow safety tie-down.

4.2.3. Transom Tie-downs

Transom (Rear) tie-downs are highly recommended. They help keep the stern of the boat securely in place on rough roads and may prevent the boat and trailer from separating in an accident. Transom tie-downs may be purchased from most boat dealers or other marine retailers. Be sure the transom tie-downs are properly rated for the size and weight of your boat.

Loading the Trailer

4.3. LAUNCHING AND LOADING GUIDELINES

4.3.1. Launching the Boat

- ◆ Remove transom tie-downs.
- ◆ Back trailer into the water far enough for the boat transom to float off of the trailer bunks.
- ◆ Start boat engine and check all systems.
- ◆ Disconnect winch strap and, if so equipped, the bow safety strap.
- ◆ Back boat off trailer.
- ◆ Locate water line on trailer frame and fenders for future reference when reloading. The water line will vary slightly from ramp to ramp.

^ WARNING

Failure to leave the trailer winch strap hooked until the boat is in the water will create an immediate hazard. The boat may separate from the trailer, which can lead to bodily injury and damage to the boat.

4.3.2. Loading the Boat

- ◆ Back trailer into water until bunks are completely submerged.
- ◆ Pull forward to the water line established at launching.
- ◆ Slowly approach the center of the trailer while compensating for the direction and strength of wind and current.
- ◆ Once the boat has made contact with the trailer bunks, raise the lower unit part way to help push the stern of the boat down and raise the bow while powering the rest of the way onto the trailer. If power loading is not permitted, you may find it helpful to back the trailer deeper into the water once the boat has been centered.
- ◆ Hook up the winch strap and ensure that the bow of the boat is tightened securely against the bow roller.
- ◆ Attach bow safety strap, if so equipped.
- ◆ Raise lower unit to the trailering position and shut off engine.

Loading the Trailer

- ◆ Pull clear of the launch ramp.
- ◆ Secure transom tie-downs.
- ◆ Check to ensure lights are working properly.
- ◆ Check to ensure canvas and any cargo are secured properly.

Loading the Trailer

Checking the Trailer Before and During Each Tow

5. CHECKING THE TRAILER BEFORE AND DURING EACH TOW

5.1. PRE-TOW CHECKLIST

Before towing, double-check all of these items:

- ◆ Tires (see Section 1.2.7 starting on page 7 of this manual or Section 2.4 starting on page 28).
- ◆ Wheels (see Section 1.2.7 starting on page 7).
- ◆ Lug nuts (see Section 1.2.7 starting on page 7).
- ◆ Coupler (see Section 1.2.3 starting on page 4 or Section 3.2 starting on page 41).
- ◆ Safety cables/chains (see Section 1.2.4 starting on page 5 or Section 3.3.4 starting on page 45).
- ◆ Lights: tail, stop, and turn (see Section 1.2.11 starting on page 13).
- ◆ Breakaway cable (see Section 3.3.5 starting on page 47).
- ◆ Load (see Section 1.2.8 starting on page 10 or Chapter 4 starting on page 53).
- ◆ Tongue weight (see Section 1.2.9 starting on page 12 or Section 3.3.3 starting on page 44).

5.2. MAKE REGULAR STOPS

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

- ◆ Coupler secured.
- ◆ Safety cables/chains are fastened and not dragging.
- ◆ Winch strap and transom tie-downs are tight.

Checking the Trailer Before and During Each Tow

Breaking-In A New Trailer

6. BREAKING-IN A NEW TRAILER

6.1. 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. For torque specifications, see Section 8.1.9 beginning on page 77.

^ WARNING

Lug nuts are prone to loosen after initial installation, which can cause a wheel to come off, leading 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.

6.2. ADJUST BRAKE SHOES

Some trailer brakes are self-adjusting while others require periodic manual adjustments. In either case, the brake system on the trailer should be inspected at least annually to insure safe and efficient operation.

If your trailer is equipped with brakes, read the axle and brake manual for details regarding service and maintenance of the trailer's brake system. If you do not have the axle and brake manual, contact your dealer or *Heritage Custom Trailers* for a free copy.

Breaking-In A New Trailer

6.3. SYNCHRONIZING THE BRAKE SYSTEMS

Trailer brakes are designed to work in synchronization with the brakes on the tow vehicle. Do not use either brake system alone to stop the combined tow vehicle and trailer.

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 manufacturers' instructions for the actuator, axle/brake system and brake controller. If you do not have these instructions, contact your dealer or *Heritage Custom Trailers* for a free copy.

7. ACCESSORIES

This chapter provides some basic information for the safe operation of 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 are uncertain whether you have all of the instructions, contact your dealer or *Heritage Custom Trailers* at 618-439-9626 or info@heritagetrailers.com before operating the accessory. The following accessories are described in this section:

- Accessory battery
- Electric-powered landing gear

7.1. ACCESSORY BATTERY

Your trailer may be outfitted with an accessory battery that operates lighting, electric landing gear, or other accessories. An accessory battery may be kept charged either by the tow vehicle or by the periodic use of an external 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.

7.2. ELECTRIC-POWERED LANDING GEAR

The landing gear (also known as the jack) on your trailer may be powered with an electric motor. The landing gear is operated up or down using controls located on or near the landing gear.

Accessories

If the motor does not operate, such as when the battery is fully discharged, the landing gear can be operated manually with a socket wrench or hand crank provided by the jack manufacturer. For more information consult the owner's manual provided by the jack manufacturer.

Inspection, Service, and Maintenance

8. INSPECTION, SERVICE, AND MAINTENANCE

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, get the recommendation of, or have the repair done by, your dealer.

Note: In addition to this manual, also check the relevant component manufacturer's manual.

Inspection, Service, and Maintenance

Inspection and Service before Each Use		
<i>Item</i>	<i>Inspection / Service</i>	<i>Manual Section Reference</i>
Brakes, Electric	Check operation	Sections 3.3.5, 6.3, and 8.1.2.2
Brakes, Electric over Hydraulic or Hydraulic	Check operation Check fluid level	Sections 3.3.5, 6.3, 8.1.2.3 & 8.1.2.4 Sections 1.2.5, 8.1.2.3 & 8.1.2.4
Accessory Battery	Fully charged, connections clean	Section 7.1 & 8.1.2.2.C
Shoes and Drums	Adjust	Sections 6.2 & 8.1.2.2.D
Coupler and Hitch Ball	Check for wear and damage Lubricate Check operation	Sections 1.2.3, 3.3 & 8.1.3
Safety Cables/Chain(s) & Hooks	Check for wear and damage	Sections 1.2.4 & 3.3.4
Tires	Check tire pressure when cold Inflate as needed	Sections 1.2.7 & 2.5
Wheels - Lug Nuts (Bolts) & Hub	Check for tightness Tighten For new and remounted wheels, check torque after first 10, 25 & 50 miles of driving and after any impact	Sections 1.2.7, 6.1 & 8.1.9

Inspection, Service, and Maintenance

Inspection and Service each 6 Months or 6,000 Miles		
<i>Item</i>	<i>Inspection / Service</i>	<i>Manual Section Reference</i>
Tires	Rotate @ 5,000 miles Inspect tread and sidewalls thoroughly Repair and replace when worn or damaged	Section 2.5 Sections 1.2.7, 2.5.6 & 8.1.6 Sections 1.2.7, 2.5.8 & 8.1.6
Brakes, Electric and Electric over Hydraulic > Magnets	Check wear and current draw	Section 8.1.2.2 & 8.1.2.4
> Controller (in tow vehicle)	Check power output (amperage) and modulation	Section 8.1.2.2.A See controller mfr's manual

Inspection, Service, and Maintenance

Inspection and Service Each Year or 12,000 Miles		
<i>Item</i>	<i>Inspection / Service</i>	<i>Manual Section Reference</i>
Brakes, all types > Shoes and drums, or pads and rotors	Check for scoring and wear Replace per manufacturer's specifications	Sections 1.2.5, 3.3.5, 6.2 & 8.1.2.2.D See brake mfr's manual
Structure > Frame members > Welds > Axle Attachment Bolts	Inspect all frame members, bolts, and rivets Repair or replace damaged, worn, or broken parts. Inspect all welds Repair as needed Check BY DEALER	Section 8.1.1.1 Section 8.1.1.2
Wheels > Sealed Bearings (Hubs) > Rims	Check and confirm free running Replace if not (sealed bearings are not serviceable) Inspect for cracks and dents Replace as needed	Section 8.1.8 Section 8.1.7

Inspection, Service, and Maintenance

8.1. INSPECTION AND SERVICE INSTRUCTIONS

8.1.1. Axle Bolts, Frame, Suspension, & Structure

^ WARNING

Worn or broken suspension parts can cause loss of control, which can result in injury.

Have trailer professionally inspected annually and after any impact.

^ WARNING

Never crawl under your trailer unless it is on firm and level ground and supported properly to prevent it from falling or rolling onto you.

8.1.1.1. Fasteners and Frame Members

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

Inspection, Service, and Maintenance

^ WARNING

Broken or damaged fasteners or welds may cause damage to trailer and contents, which can result in injury.

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

8.1.1.2. Welds

Welds may crack or fail due to overloading or movement of a boat that was not properly secured to prevent movement. Any time that you know or suspect that the trailer has been overloaded or the boat has moved while in transit, 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 or other qualified personnel.

8.1.2. Trailer Brakes

8.1.2.1. Brake Adjustments

Some trailer brakes are self-adjusting while others require periodic manual adjustments. In either case, the brake system on your trailer should be inspected at least annually to insure safe and efficient operation.

Inspection, Service, and Maintenance

Read the manual provided by the axle and brake manufacturer for details regarding service and maintenance of the brake system. If you do not have the axle and brake manual, contact your dealer or *Heritage Custom Trailers* for a free copy.

8.1.2.2. Electric Brakes

Electric brake systems on the trailer operate in conjunction with the brakes on the tow vehicle and consist of four different components that need to be regularly inspected and maintained to ensure proper operation.

8.1.2.2.A. VEHICLE BRAKE CONTROLLER

The brakes on the trailer must be synchronized with the brakes on the tow vehicle so that braking is properly distributed between the trailer and the tow vehicle. The vehicle-mounted brake controller must be properly wired and may require adjustment every time the trailer is towed.

8.1.2.2.B. BREAKAWAY SWITCH

This switch is mounted on the trailer and connected to the tow vehicle. If the trailer uncouples from the tow vehicle and breaks the electrical connection in the switch, it causes the breakaway battery to operate the electric brakes to prevent a runaway trailer.

8.1.2.2.C. BREAKAWAY BATTERY

This battery supplies power to the trailer brakes if the trailer uncouples from the tow vehicle. Some electric brake systems may charge the breakaway battery with power supplied through the electrical connection to the tow vehicle; however, some systems require the use of an external charger to periodically charge the battery. The breakaway battery discharges rapidly when the breakaway brake system is actuated, so the battery should be charged and inspected on a regular basis, at least monthly.

8.1.2.2.D. BRAKE DRUMS

Electric brake systems use a drum brake setup and require routine inspection and adjustment of the brake shoes. The magnets located on the backing plate behind the brake drum should be checked to ensure proper operation every time the brake shoes are adjusted, or at least once per year.

Inspection, Service, and Maintenance

Refer to the owner's manual provided by the brake drum manufacturer for more details on inspecting and maintaining your brake drums.

8.1.2.3. Hydraulic "Surge" Brakes

Trailers equipped with hydraulic "surge" brakes operate from the weight of the trailer and the load pushing against the tow vehicle. When the tow vehicle brakes are applied the "surge" or push of the trailer against the tow vehicle causes the brake actuator to telescope together, generating hydraulic pressure that is routed to the trailer brakes.

For hydraulic "surge" brakes to operate, the proper fluid level must be maintained in the brake actuator master cylinder reservoir. Your brake fluid level should be checked at least every three months or more depending on the climate, topographical terrain, and mileage towed. Most hydraulic "surge" brake systems require DOT 3 or 4 brake fluid that can be acquired at any auto parts store. If the fluid level in the brake actuator master cylinder reservoir falls below the required level, air will get into the trailer brake system causing it to be ineffective.

Refer to the owner's manual provided by the brake actuator manufacturer for instructions on bleeding air from system and other inspection and maintenance requirements.

8.1.2.4. Electrically Operated Hydraulic Brakes

Electrically operated hydraulic brakes, commonly referred to as "electric over hydraulic," use an electrical pump to generate hydraulic pressure that operates the brakes. Like electric brakes, "electric over hydraulic", braking systems are operated by an electrical signal from a brake controller in the tow vehicle.

For "electric over hydraulic" brakes to operate properly, they must be synchronized with the tow vehicle brakes so that braking is equally distributed between the trailer and the tow vehicle. At least every three months all electrical connections should be inspected for loose or frayed wires and, like regular hydraulic brake systems, the proper fluid level must be maintained in the hydraulic reservoir to prevent air from entering the system.

Inspection, Service, and Maintenance

Refer to the owner's manual provided by the brake control manufacturer and the hydraulic pump manufacturer for more details on inspecting and maintaining your "electric over hydraulic" brake systems.

8.1.3. Trailer Connection to Tow Vehicle

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 grease to reduce wear and ensure proper operation.
- ◆ 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 on your specific coupler set up.

If there is 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.

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

8.1.4. Landing Leg or Jack

If a grease fitting is present, 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.

8.1.5. Lights and Signals

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

Inspection, Service, and Maintenance

^ WARNING

Improper operating taillights, brakelights, and turn signals can cause collisions.

Check all lights before each tow.

8.1.6. Tires

Before each tow, check to see that tire pressure is at the PSI indicated on the tire sidewall. Tire pressure must be checked while tires are cold. If the trailer has been towed as much as one mile, allow at least three hours for tires to cool. Replace any tire before towing the trailer if the tire treads have less than 1/16 inch depth or the telltale bands are visible.

A bubble, cut, or bulge in a sidewall can result in a tire blowout. Inspect both sidewalls 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, resulting in damage, serious injury, and possibly death.

Inspect tires before each tow.

8.1.7. Wheels

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

Inspection, Service, and Maintenance

8.1.8. Bearings

Heritage Custom Trailers use axles that are specifically built for marine use. The hubs and brakes arrive preassembled to ensure everything is set to the manufacturer's specifications, virtually eliminating any service or warranty issues. Because we use marine grade axles, the bearings do not need to be repacked every season and, if properly maintained, can go years without being repacked. For service and maintenance requirements refer to the axle manufacturer's manual. If you do not have this manual, contact your dealer or *Heritage Custom Trailers* for a free copy.

8.1.9. 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

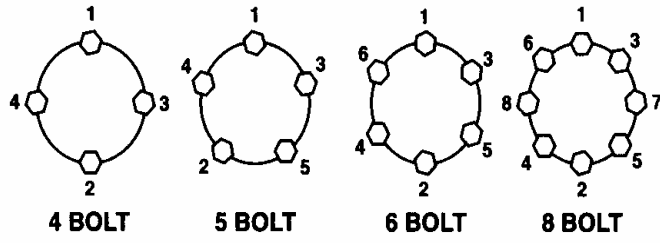
Metal creep between the wheel and axle hub may cause the lug nuts to loosen which could result in the wheel separating from the trailer causing death or serious injury.

Check the lug nuts for tightness 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. 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.

Inspection, Service, and Maintenance

Figure 8-1 Lug nut sequence of tightening



Inspection, Service, and Maintenance

Steel Wheels		
Lug Nut Torque 13 to 16 inch		
Rim Size	Stud Size	Torque Foot-pounds
13 inch (5 lug)	1/2 inch	75-85
14-16 inch (5-8 lug)	1/2 inch	85-95

Aluminum Wheels		
Lug Nut Torque 14 to 16 inch		
Rim Size	Stud Size	Torque Foot-pounds
14-16 inch (5-8 hole)	1/2 inch	95-105

Inspection, Service, and Maintenance

8.2. CARE AND CLEANING

8.2.1. Cleaning

The easiest way to keep your *Heritage Custom Trailer* and boat looking new is to wipe both of them down with a clean, damp towel when you pull them from the water at the end of the day. This is much quicker and easier than washing them after the grime from the road and the water have dried to the surfaces.

8.2.2. Care of Chrome Wheels

If your *Heritage Custom Trailer* is equipped with chrome wheels, wax and WD-40 are a must. Wheel manufacturers will only warrant clear-coated chrome wheels against rust and corrosion for one (1) year. Applying a coat of wax in the summer and a coating of WD-40 when your trailer is stored for the winter will help slow down the tendency of chrome wheels to rust.

8.2.3. Care of Painted Surfaces

One of the best ways to protect the painted finish on your *Heritage Custom Trailer* is to use a set of rear splash guards on your tow vehicle. A set of generously sized splash guards positioned 4 to 5 inches off the road surface will stop most, but not all of the road debris being propelled at your trailer. Pulling a trailer at 60 m.p.h. without a set of splash guards is similar to shot-blasting or sandblasting the trailer; any painted surface will start to fail if subjected to that type of abuse for long periods of time. To further protect the finish on your trailer, apply a coat of wax to all painted surfaces at least once per year.