

MORITZ

TRAILERS & TRUCK BODIES

ELH AR SERIES

EQUIPMENT TRAILER ALUMINUM RAMP OWNER'S MANUAL



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Introduction

1. INTRODUCTION

For your safety, read and understand this manual and all other manuals before operating your trailer. If there are any questions about information in this manual, please consult your dealer.

When calling about your trailer, please have the VIN number available for the dealer. The VIN number is normally on the front left side of the trailer.

For future reference, please write your VIN number in the space below:

You must read, understand and follow the instructions in this manual, the tow vehicle manual and trailer hitch manufacturers manual. Keep all manuals provided with your trailer in a safe place at all times.

Safety

2. SAFETY

2.1 SAFETY ALERT SYMBOLS AND SIGNAL WORDS

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

Our trailers are built with components produced by various manufacturers. Some of these items have separate instruction manuals. Where this manual indicates that you should read another manual, and you do not have that manual, contact your dealer for assistance.

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



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

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

DANGER

DANGER - Indicates a hazardous situation, which, if not avoided, WILL result in death or serious injury.

WARNING

WARNING - Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION - Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE - Indicates a situation that could result in damage to the equipment or other property.

2.2 MAJOR HAZARDS

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

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

2.2.1 IMPROPER SIZING OF TRAILER TO TOW VEHICLE

Do not exceed the maximum towing capacity of your tow vehicle. Towing capacity of your tow vehicle can be found in the tow vehicle Owner's Manual.

DANGER

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

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

2.2.2 DRIVING TOO FAST

Never exceed the speed limit or tire speed rating, whichever is less. Driving too fast can cause the trailer to sway, thus increasing the possibility for loss of control. Also your tires may overheat, increasing the possibility of a blowout.

Safety

WARNING

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

Adjust speed down when towing trailer.

2.2.3 ADJUST DRIVING WHEN TOWING TRAILER

When towing a trailer, you will have decreased acceleration, increased stopping distance, and increased turning radius.

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

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

2.2.4 TRAILER NOT PROPERLY COUPLED TO HITCH

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

WARNING

Proper selection and condition of the coupler and hitch are essential to safely towing a trailer.

A loss of coupling may result in death or serious injury.

Hitch size must match coupler size.

Be sure hitch load rating is equal to or greater than load rating of the coupler.

Be sure hitch components are tight before coupling trailer to tow vehicle.

Observe hitch for wear, corrosion and cracks before coupling. Replace worn, corroded or cracked hitch components before coupling trailer to tow vehicle.

WARNING

An improperly coupled trailer can result in death or serious injury. Do not move the trailer until:

- **Coupler is secured and locked to hitch.**
- **Safety chains are secured to tow vehicle.**
- **Trailer jack(s) are fully retracted.**
- **Trailer brakes are checked.**
- **Tires and wheels are checked.**
- **Breakaway switch is connected to tow vehicle;**
- **The trailer lights are connected and checked.**
- **Load is secured to trailer.**

Safety

2.2.5 PROPER USE OF SAFETY CHAINS

Safety chains are provided so that control of the trailer can be maintained if your trailer comes loose from the hitch.

WARNING

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

Cross chains underneath hitch and coupler with enough slack to permit turning and to hold tongue up, if the trailer comes loose.

Fasten chains to frame of tow vehicle.

Do not fasten chains to any part of the hitch unless hitch has holes or loops specifically for that purpose.

2.2.6 PROPER CONNECTION OF BREAKAWAY BRAKE

Trailer is equipped with a breakaway brake system that can apply trailer brakes if trailer comes loose from hitch. Breakaway brake system, including battery, must be in good condition and properly rigged to be effective.

Connect lanyard to tow vehicle so that electric brake pullpin will be pulled out before all slack in safety chains is taken up.

WARNING

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

Breakaway lanyard must be connected to the tow vehicle, NOT to any part of the hitch.

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

2.2.7 MATCHING TRAILER AND HITCH

DANGER

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

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

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

2.2.8 WORN TIRES, LOOSE WHEELS AND LUG NUTS

Inspect all trailer tires before each tow. If a tire has a bald spot, bulge, cut, cracks, or is showing any cords, replace the tire before towing.

If a tire has uneven tread wear, take trailer to a trailer service center for diagnosis. Uneven tread wear can be caused by tire imbalance, axle misalignment or incorrect inflation.

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

Improper tire pressure causes increased tire wear and may reduce trailer stability, which can result in a tire blowout or possible loss of control. Check tire air pressure before each tow.

The proper tire pressure is listed on the Certification / VIN label. Check air pressure when tires are cold. Allow 3 hours cool-down after driving as much as 1 mile at 40 mph before checking tire pressure.

Safety

WARNING

Inflate tires to pressure stated on the tire and also on the Certification / VIN label.

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

Check tire air pressure before towing trailer.

Refer to axle manual for wheel lug torque specifications. If axle manual is not available, contact your dealer.

WARNING

Metal creep between the wheel rim and wheel nuts or bolts may cause rim to loosen.

Death or injury can occur if wheel comes off.

Tighten lug nuts or bolts before each tow.

The proper torque for wheel lugs and tightening sequence is listed in the Inspection, Service and Maintenance section of this manual. Improper tightening of wheel lugs voids the axle warranty.

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

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

WARNING

Wheel lugs are prone to loosen after being first assembled. Death or serious injury can result.

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

WARNING

Inadequate wheel lug torque can cause a wheel to separate from the trailer, leading to death or serious injury.

Verify wheel lugs are tight before each tow.

2.2.9 IMPROPER LOADING

The total weight on trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR).

If you do not know the empty weight of the trailer plus the cargo weight, you must weigh loaded trailer. Distribute load so that load on any axle does not exceed the Gross Axle Weight Rating (GAWR).

On Tire & Loading Information Placard (trailers under 10,000 GVWR only), cargo capacity weight stated on placard is a close estimate. The GVWR and GAWR are listed on Certification / VIN label.

WARNING

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

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

Never exceed the trailer Gross Vehicle Weight Rating (GVWR) or axle Gross Axle Weight Rating (GAWR).

2.2.10 UNSAFE LOAD DISTRIBUTION

Improper front / rear load distribution can lead to an unstable trailer or poor tow vehicle handling. Poor trailer stability results from tongue weights that are too low, and poor tow vehicle stability results from tongue weights that are too high.

Refer to the "Loading And Unloading" section for more information.

In the following table, the second column shows the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Vehicle Weight Rating, or GVWR) that appears on the VIN tag.

Safety

Tongue weight as a percentage of loaded trailer weight.	
Type of Hitch	Percentage
Ball Hitch (or Bumper Pull)	10-15%
	6-10% for smaller utility and cargo trailers.
Gooseneck Hitch	20-25%
Fifth Wheel Hitch	

The numbers quoted are for example purposes only and should be tailored to the specific trailer.

Locate load such as to provide the proper tongue weight. After loading, be sure to check that none of the axles are overloaded.

Uneven left / right load distribution can cause tire, wheel, axle or structural failure.

Be sure your trailer is evenly loaded left / right. Towing stability also depends on keeping the center of gravity as low as possible.

WARNING

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

Make certain that tongue weight is within the allowable range.

Be sure to:

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

2.2.11 SHIFTING CARGO

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

WARNING

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

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

2.2.12 INAPPROPRIATE CARGO

A trailer must not be used to carry people, containers of hazardous substances or containers of flammable substances.

WARNING

Do not transport people on your trailer. Besides putting their lives at risk, the transport of people on a trailer is illegal.

WARNING

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

The exception is fuel in the tank of a vehicle or equipment being hauled.

2.2.13 INOPERABLE BRAKES OR LIGHTS

Tow vehicle must have an electric brake controller that sends power to the trailer brakes.

Before towing, operate brake controller while trying to pull trailer to confirm electric brakes operate. While towing trailer at less than 5 mph, manually operate electric brake controller. You should feel the operation of the trailer brakes.

Be sure electric brakes and all lights on trailer are functioning properly before towing trailer.



WARNING

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

Before each tow:

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

2.2.14 TRAILER MODIFICATIONS

Modification or alteration of the trailer can make the trailer unsafe and will void the warranty. Before making any modification or alteration, contact Moritz and describe the alteration you are contemplating. The manufacturer is the only one that can authorize modifications.

2.2.15 TRAILER TOWING GUIDE

Contact the DMV in your state to determine which drivers license class is required.

Driving a vehicle with a trailer in tow is vastly different from driving the same vehicle without a trailer in tow. Acceleration, maneuverability and braking are all diminished with a trailer in tow. It takes longer to get up to speed; you need more room to turn and pass, and more distance to stop when towing a trailer.

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.

Find an open area with little or no traffic for your first practice. Before you start towing trailer, you must follow all of the instructions for inspection, testing, loading and coupling. Adjust mirrors so you can see trailer as well as the area to the rear of it.

Drive slowly at first and turn the wheel to get the feel of how tow vehicle and trailer combination responds. Next, make some right and left hand turns. Watch in side mirrors to see how trailer follows tow vehicle.

Stop the rig a few times from speeds no greater than 10 mph. 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. Before backing up, get out of the tow vehicle and look behind trailer to make sure that there are no obstacles.

2.2.16 SAFE TRAILER TOWING GUIDELINES

Before towing, check coupling, safety chain, brakes, tires, wheels, breakaway switch, battery and lights.

Check wheel lugs for tightness.

Check load tie downs to make sure the load will not shift during towing.

Check coupler tightness after towing 50 miles.

Adjust brake controller to engage trailer brakes before tow vehicle brakes. Follow brake controller manufacturer's literature.

Use 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 trailer and tow vehicle.

Use lower gears for climbing and descending grades.

Do not ride brakes while descending grades; they may get so hot that they stop working. Then you will potentially have a runaway tow vehicle and trailer.

Do not apply tow vehicle brakes to correct extreme trailer swaying. Instead, lightly apply trailer brakes with hand controller.

Make regular stops, about once each hour. Confirm that:

- Coupler is secure to hitch and is locked.
- Electrical connectors are made.
- There is appropriate slack in safety chains.
- There is appropriate slack in breakaway lanyard.
- Tires are not visibly low on pressure.
- Cargo is secure and in good condition.

Do not brake while in a curve unless absolutely necessary. Instead, slow down before you enter the curve.

Do not drive so fast that trailer begins to sway due to speed.

Allow plenty of room for passing. It takes much more distance to pass with a trailer than without a trailer.

2.2.17 SAFETY WARNING LABELS ON TRAILER

Depending on trailer configuration, your trailer may not be equipped with all safety labels shown.

WARNING

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

If any of these labels are missing or cannot be read, contact your dealer for replacement labels.

WARNING

- Do not operate this trailer unless you have read and understand the safety information in the owner's manual!
- Failure to properly operate and maintain the towing vehicle and trailer can result in injury.

WARNING

Prevent bodily injury and/or equipment damage.

Winch mount is rated for 8000 lbs.

The use of a multi-part line increases pulling power of winch, but does not increase weight rating of the winch mount.

Do not exceed weight rating of the winch mount.

BK18032924811

CAUTION

**DO NOT EXCEED
MANUFACTURER'S
VEHICLE WEIGHT
RATINGS OR LOADING
RECOMMENDATIONS.**

CAUTION

**SECURE ALL
RAMPS, DOORS,
GATE LATCHES &
PINS BEFORE
MOVING TRAILER**

Safety

<p>⚠ WARNING</p> <p>Uncoupling will cause trailer to come loose from tow vehicle. You must:</p> <ol style="list-style-type: none"> 1. CHECK that ball LOAD RATING is same or greater than coupler LOAD RATING. 2. CHECK that ball SIZE is same as coupler. 3. CLOSE COUPLER CLAMP on ball. 4. LIFT coupler upwards to test that it will not separate from ball. 5. LOCK sleeve with pin or padlock. 		<p>⚠ WARNING</p> <p>ALWAYS use safety chains. Chains hold trailer if connection fails. You must:</p> <ol style="list-style-type: none"> 1. CROSS chains underneath coupler. 2. ALLOW slack for trailer to turn. 3. ATTACH chain hooks securely to tow vehicle frame. 	
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<p>⚠ WARNING</p> <p>Trailer can roll if it comes loose. Electric safety brake applies when cable pulls pin out of switch box.</p> <ol style="list-style-type: none"> 1. PULL hard to get pin out of switch box. 2. CHECK brake by PULLING TRAILER with tow vehicle. 3. ATTACH pin CABLE to tow vehicle so pin will be pulled out if trailer separates. 4. Promptly REPLACE pin in switch box. 	<p>PIN PULLED OUT, ONLY TO TEST BRAKES</p>	<p>⚠ WARNING</p> <p>Lights can prevent trailer from being hit by other vehicles. Trailer brakes will fail to operate without proper electrical connection.</p> <ol style="list-style-type: none"> 1. CONNECT trailer and tow vehicle electrical connectors. Leave slack for turning. 2. CHECK all lights: tail lights, turn signal, and brake lights. 3. TEST BRAKES: manually activate brake controller and pull trailer ahead slightly with tow vehicle to test brakes. 4. DO NOT TOW if lights and brakes are not working.
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<p>⚠ WARNING</p> <p>Trailer can roll if it comes loose. Electric safety brake applies when cable pulls pin out of switch box.</p> <ol style="list-style-type: none"> 1. PULL hard to get pin out of switch box. 2. CHECK brake by PULLING TRAILER with tow vehicle. 3. ATTACH pin CABLE to tow vehicle so pin will be pulled out if trailer separates. 4. Promptly REPLACE pin in switch box. 	<p>PIN PULLED OUT, ONLY TO TEST BRAKES</p>	<p>⚠ WARNING</p> <p>Lights can prevent trailer from being hit by other vehicles. Trailer brakes will fail to operate without proper electrical connection.</p> <ol style="list-style-type: none"> 1. CONNECT trailer and tow vehicle electrical connectors. Leave slack for turning. 2. CHECK all lights: tail lights, turn signals, and brake lights. 3. TEST BRAKES: manually activate brake controller and pull trailer ahead slightly with tow vehicle to test brakes. 4. DO NOT TOW if lights and brakes are not working.
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<p>⚠ WARNING</p> <p>Uncoupling will cause trailer to come loose from tow vehicle. You must:</p> <ol style="list-style-type: none"> 1. CHECK that ball LOAD RATING is same or greater than coupler LOAD RATING. 2. CHECK that ball SIZE is same as coupler. 3. CLOSE COUPLER CLAMP on ball. 4. LIFT coupler upwards to test that it will not separate from ball. 5. LOCK sleeve with pin or padlock. 		<p>⚠ WARNING</p> <p>ALWAYS use safety chains. Chains hold trailer if connection fails. You must:</p> <ol style="list-style-type: none"> 1. ALLOW slack for trailer to turn. 2. ATTACH chain hooks securely to tow vehicle frame. 	
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<p>⚠ WARNING</p> <p>Improper loading can cause trailer sway and sudden loss of control. You must:</p> <ul style="list-style-type: none"> • Make certain weight of load plus trailer weight does not exceed trailer's capacity (GVWR-Gross Vehicle Weight Rating). • Load heavier items in front of wheels. • Load evenly side to side. • SECURE load to trailer. 	
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2.2.18 REPORTING SAFETY DEFECTS

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

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

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); or go to <http://www.safercar.gov>; or write to:

Administrator, NHTSA,
1200 New Jersey SE,
Washington, DC 20590.

You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

Tire Safety

3. TIRE SAFETY INFORMATION

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

Section 3.1 contains "Trailer Tire Information".

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

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

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

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

This brochure, as well as 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:
 - A. Cold inflation pressure.
 - B. Vehicle Placard and location on the vehicle.
 - C. Adverse safety consequences of under inflation (including tire failure).
 - D. 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:
 - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
 - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
 - C. Determining compatibility of tire and vehicle load capabilities.
 - D. Adverse safety consequences of overloading on handling and stopping on tires.

3.1 TRAILER TIRE INFORMATION

Trailer tires may be worn out even though they still have plenty of tread left. This is because trailer tires have to carry a lot of weight all the time, even when not in use.

It is actually better for the tire to be rolling down the road than to be idle. During use, the tire releases lubricants that are beneficial to tire life. Using the trailer tires often also helps prevent flat spots from developing.

The main cause of tire failure is improper inflation. Check the cold tire inflation pressures at least once a week for proper inflation levels. "Cold" means that the tires are at the same temperature as the surrounding air, such as when the vehicle has been parked overnight. Wheel and tire manufacturers recommend adjusting the air pressure to the trailer manufacturer's recommended cold inflation pressure, in pounds per square inch (PSI) stated on the vehicle's Federal Certification Label or Tire Placard when the trailer is loaded to its gross vehicle weight rating (GVWR).

If the tires are inflated to less than the recommended inflation level or the GVWR of the trailer is exceeded, the load carrying capacity of the tire could be dramatically affected. If the tires are inflated more than the recommended inflation level, handling characteristics of the tow vehicle/trailer combination could be affected. Refer to the owner's manual or talk to your dealer or vehicle manufacturer if you have any questions regarding proper inflation practices.

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

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

Statistics indicate the average life of a trailer tire is about five years under normal use and maintenance conditions. After three years, replacing the trailer tires with new ones should be considered, even if the tires have adequate tread depth. Some experts claim that

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after five years, trailer tires are considered worn out and should be replaced, even if they have had minimal or no use. This is such a general statement that it may not apply in all cases. It is best to have your tires inspected by a tire supplier to determine if your tires need to be replaced.

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

3.2 STEPS FOR DETERMINING CORRECT LOAD LIMIT - TRAILER

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all 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 can not exceed the stated GVWR.

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

Excessive loads and/or under inflation cause tire overloading and, as a result, normal tire flexing occurs.

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

3.2.1 TRAILERS 10,000 POUNDS GVWR OR LESS

TIRE AND LOADING INFORMATION			
The weight of cargo should never exceed XXX kg. or XXX lbs.			
TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	20.5x8.0-10(E)	621KPA, 90PSI	
REAR			
SPARE	NONE		

1. Locate the statement, "The weight of cargo should never exceed XXX kg or XXX lbs.," on your vehicle's placard.
2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.
4. The trailer's placard refers to the Tire Information Placard attached adjacent to or near the trailer's VIN (Certification) label at the left front of the trailer.

3.2.2 TRAILERS OVER 10,000 POUNDS GVWR

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

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
3. 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 Administration (NHTSA) in addition to notifying us.

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3.3 STEPS FOR DETERMINING CORRECT LOAD LIMIT - TOW VEHICLE

1. Locate the statement, "The combined weight of occupants and cargo should never exceed XXX lbs.," on your vehicle's placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. 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.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in previous step.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle's manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

3.4 GLOSSARY OF TIRE TERMINOLOGY

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

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.

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

Groove: The space between two adjacent tread ribs.

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

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

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

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

Innerliner separation: The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall: The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other

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sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

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

Load rating: The maximum load 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.

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

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

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

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

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.

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

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

Ply: A layer of rubber-coated parallel cords.

Ply separation: A parting of rubber compound between adjacent plies.

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

Production options weight: The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

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

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

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

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

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Rim diameter: This means the nominal diameter of the bead seat.

Rim size designation: This means the rim diameter and width.

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

Rim width: This means the nominal distance between rim flanges.

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

Sidewall: That portion of a tire between the tread and bead.

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

Special Trailer (ST) tire: The "ST" is an indication the tire is for trailer use only.

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

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

Tread rib: A tread section running circumferentially around a tire.

Tread separation: Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI): The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

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

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

Vehicle normal load on the tire: The load on an individual tire that is determined by distributing to each

axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

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

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

Wheel-holding fixture: The fixture used to hold the wheel and tire assembly securely during testing.

3.5 TIRE SAFETY - EVERYTHING RIDES ON IT

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

http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html

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

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- Fundamental characteristics of tires
- Tire safety tips.

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

3.5.1 SAFETY FIRST- BASIC TIRE MAINTENANCE

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

3.5.2 FINDING YOUR VEHICLE'S RECOMMENDED TIRE PRESSURE AND LOAD LIMITS

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

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR—the maximum weight the axle systems are designed to carry).
- Both placards and certification labels are permanently attached to the trailer near the left front.

3.5.3 UNDERSTANDING TIRE PRESSURE AND LOAD LIMITS

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

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design

load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

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

3.5.4 SAFETY FIRST - BASIC TIRE MAINTENANCE

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.

3.5.5 STEPS FOR MAINTAINING PROPER TIRE PRESSURE

1. Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
2. Record the tire pressure of all tires.
3. If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
4. If the tire pressure is too low, note the difference between the measured tire pressure and the correct

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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.

3.5.6 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.

3.5.7 TIRE TREAD

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 2/32 of an inch. Tires have built-in tread wear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear “even” with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln’s head upside down and facing you. If you can see the top of Lincoln’s head, you are ready for new tires.

3.5.8 TIRE BALANCE AND WHEEL ALIGNMENT

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire

assembly. A wheel alignment adjusts the angles of the wheels so 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.

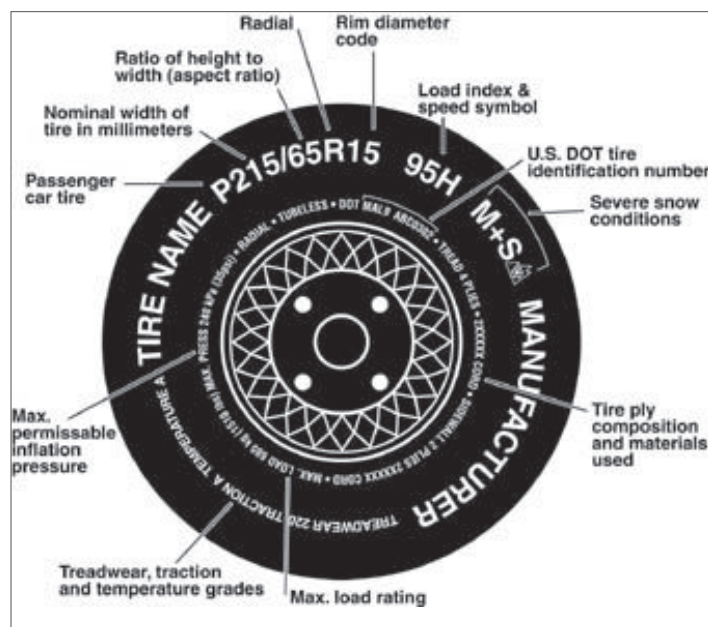
3.5.9 TIRE REPAIR

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

3.5.10 TIRE FUNDAMENTALS

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

3.5.10.1 INFORMATION ON PASSENGER VEHICLE TIRES



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.

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Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

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

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

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

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

Speed Rating: The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time.

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

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

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

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

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

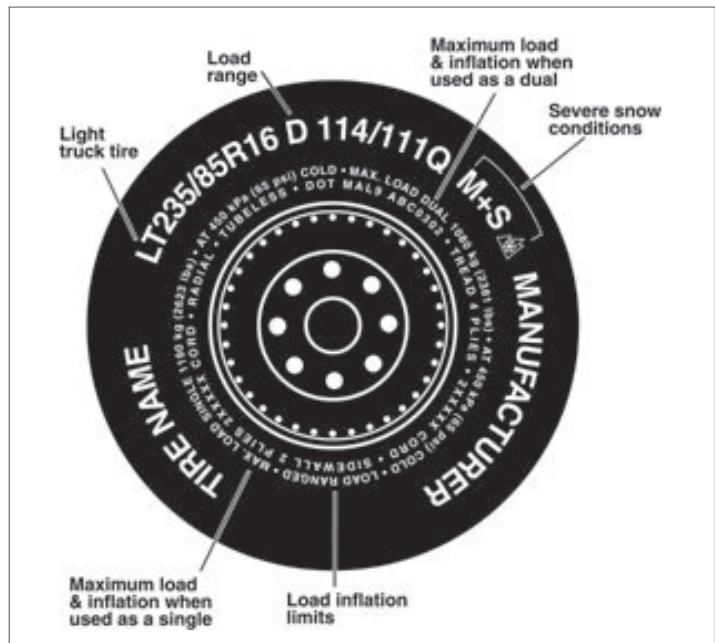
3.5.10.2 UTQGS Information

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

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

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

3.5.10.3 Additional Information On Light Truck Tires



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

LT: The “LT” indicates the tire is for light trucks or trailers.

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ST: An “ST” is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold: This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold: This information indicates the maximum load and tire pressure when the tire is used as a single.

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

3.5.10.4 Tire Safety Tips

Preventing Tire Damage

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

Tire Safety Checklist

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

Coupling To Tow Vehicle

4. COUPLING TO TOW VEHICLE

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

4.1 TOW VEHICLE AND HITCH

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

DANGER

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

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

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

4.1.1 TRAILER INFORMATION

The Certification / Vehicle Identification Number (VIN) tag is located on the front left side of the trailer.



Bumper Pull VIN Location



Gooseneck VIN Location

4.1.2 TOW VEHICLE

Vehicle manufacturers will provide you with the maximum towing capacities of their various models, as well as the GCWR.

4.2 COUPLING AND UNCOUPLING TRAILER

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

WARNING

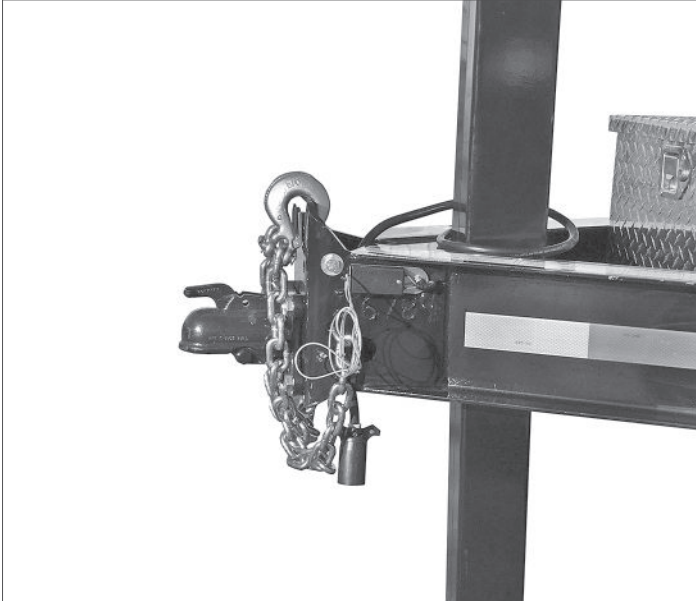
An improperly coupled trailer can result in death or serious injury. Do not move the trailer until:

- **Check that ball size and rating are matched to trailer.**
- **Coupler is secured and locked to hitch.**
- **Safety chains are secured to tow vehicle.**
- **Trailer jack(s) are fully retracted.**
- **Trailer brakes are checked.**
- **Tires and wheels are checked.**
- **Breakaway switch is connected to tow vehicle.**
- **The trailer lights are connected and checked.**
- **Load is secured to trailer.**

Coupling To Tow Vehicle

4.3 COUPLE BUMPER PULL TRAILER TO TOW VEHICLE

4.3.1 TRAILER WITH BALL HITCH COUPLER



Ball Hitch Coupler

The load rating of the coupler and ball size are listed on the coupler.

You must provide a hitch and ball for your tow vehicle, that meets or exceeds the GVWR of the trailer.

Ball and coupler must be the same size. If hitch ball is too small, too large, is underrated, is loose or is worn, trailer can come loose from tow vehicle, and may cause death or serious injury.

The tow vehicle, hitch and ball must have a rated towing capacity equal to or greater than the trailer gross vehicle weight rating (GVWR).

It is essential that the hitch ball be the same size as the coupler.

4.3.1.1 BEFORE COUPLING TRAILER TO TOW VEHICLE

1. Be sure size and rating of hitch ball match the size and rating of coupler.

⚠ WARNING

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

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

Be sure SIZE of hitch ball matches size of coupler.

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

⚠ WARNING

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

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

Replace worn or damaged hitch ball.

3. Rock ball to make sure it is tight to hitch, and visually check that hitch ball nut is solid against the lock washer and hitch frame.
4. Wipe inside and outside of coupler clean and inspect for cracks and deformations; feel inside of coupler for worn spots and pits.

On initial installation and anytime ball or coupler are replaced or reinstalled, tighten mounting hardware to the torque specified by the ball or coupler manufacturer.
5. Be sure coupler is tight to trailer tongue. All coupler fasteners must be visibly solid against trailer frame.

Coupling To Tow Vehicle

WARNING

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

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

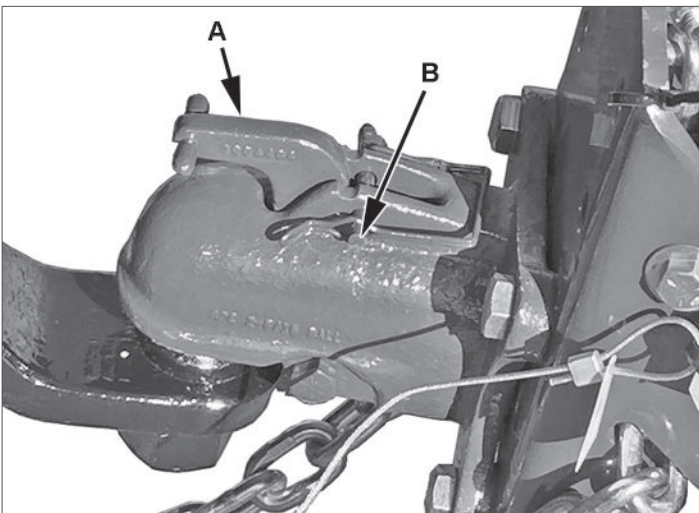
6. Raise bottom surface of coupler to be above top of hitch ball.

4.3.1.2 PREPARE COUPLER AND HITCH

1. Maintain a thin layer of automotive bearing grease on hitch ball and inside of coupler.
2. Remove safety latch pin and open coupler locking mechanism.
3. Slowly back tow vehicle so that hitch ball is near or aligned under coupler.

4.3.1.3 COUPLE TRAILER TO TOW VEHICLE

1. Lower trailer tongue until coupler fully engages hitch ball. If coupler does not line up with hitch ball, adjust position of tow vehicle.
2. Close latch and engage the coupler locking mechanism (A).
3. Insert safety lock pin (B) through hole in locking mechanism.



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

NOTICE

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

5. If coupler cannot be secured to hitch ball, do not tow trailer. Contact your dealer for assistance.
6. If equipped with a hydraulic jack, press Down or In button to retract jack. If equipped with a crank jack, turn jack handle to retract jack. Jack must be fully retracted.



CAUTION

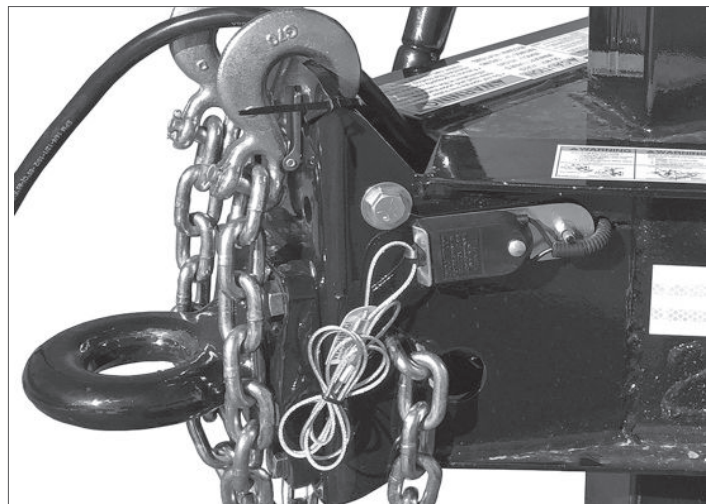
Drop leg jacks may be spring loaded and may rapidly return to the raise position when released.

Keep clear when releasing drop legs.

7. Fully retract jack drop leg if equipped.

Go to Section 4.3.3 Connect Safety Chains to continue connecting trailer to tow vehicle.

4.3.2 TRAILER WITH RING AND PINTLE COUPLER



Ring And Pintle Coupler

Coupling To Tow Vehicle

The load rating of the ring and pintle size are listed on the ring.

You must provide a hitch and pintle hook for your tow vehicle, that meets or exceeds the GVWR of the trailer.

Ring and pintle must be properly match for the size and capacity of the trailer. If pintle is underrated or is worn, trailer can come loose from tow vehicle, and may cause death or serious injury.

The tow vehicle hitch and pintle must have a rated towing capacity equal to or greater than the trailer gross vehicle weight rating (GVWR).

4.3.2.1 BEFORE COUPLING TRAILER TO TOW VEHICLE

1. Be sure pintle hook and pintle ring rating is equal to or greater than GVWR of trailer.

WARNING

Ring-to-pintle mismatch can result in uncoupling, leading to death or serious injury.

Be sure LOAD RATING of the pintle hook and pintle ring is equal or greater than the GVWR of the trailer.

2. Wipe pintle clean and inspect it visually and by feel for wear, flat spots, cracks and pits. Replace if worn more than 15% from new.

WARNING

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

Before coupling trailer, inspect pintle for wear, corrosion and cracks. Replace worn or damaged pintle.

3. Rock pintle to make sure it is tight to hitch, and visually check that pintle fasteners are solid against hitch frame.
4. Wipe inside and outside of ring clean and inspect it visually for cracks and deformations; feel inside of ring for worn spots and pits.

On initial installation and anytime ring or hook are replaced or reinstalled, tighten mounting hardware

to the torque specified by the ring or hook manufacturer.

5. Be sure ring is tight to trailer tongue. All ring fasteners must be visibly solid against trailer frame.

WARNING

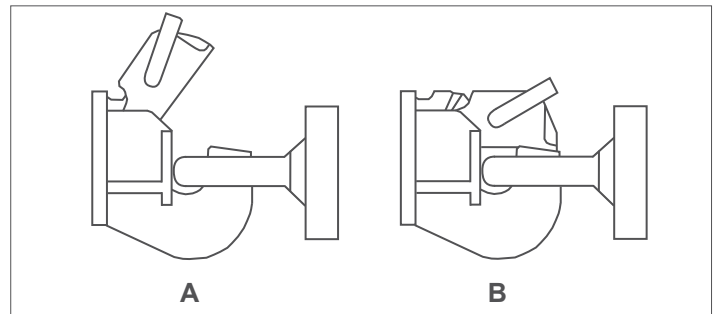
A loose pintle can result in uncoupling, leading to death or serious injury.

Make sure pintle is tight to hitch before coupling trailer.

6. Raise bottom surface of ring to be above top of open pintle.

4.3.2.2 PREPARE RING AND PINTLE

1. Lubricate inside of pintle with a thin layer of automotive bearing grease.
2. Remove safety latch pin and open pintle locking mechanism.
3. See the coupler instructions for details of placing the pintle in the open position (A).



4. Slowly back tow vehicle so that pintle is aligned under ring.

4.3.2.3 COUPLE TRAILER TO TOW VEHICLE

1. Lower trailer tongue until ring fully engages pintle. If ring does not line up with pintle, adjust position of tow vehicle.
2. Close pintle (B) and engage pintle locking mechanism.
3. Insert safety lock pin through hole in locking mechanism.
4. Be sure ring is all the way on pintle and the locking mechanism is engaged. A properly engaged locking mechanism will allow pintle to raise rear of tow vehicle. Using trailer jack, test to see that you can raise rear of the tow vehicle by 1 inch, after pintle is closed and locked.

Coupling To Tow Vehicle

NOTICE

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

5. If ring cannot be secured to pintle, do not tow trailer. Contact your dealer for assistance.
6. If equipped with a hydraulic jack, press Down or In button to retract jack. If equipped with a crank jack, turn jack handle to retract jack. Jack must be fully retracted.



CAUTION

Drop leg jacks may be spring loaded and may rapidly return to the raise position when released.

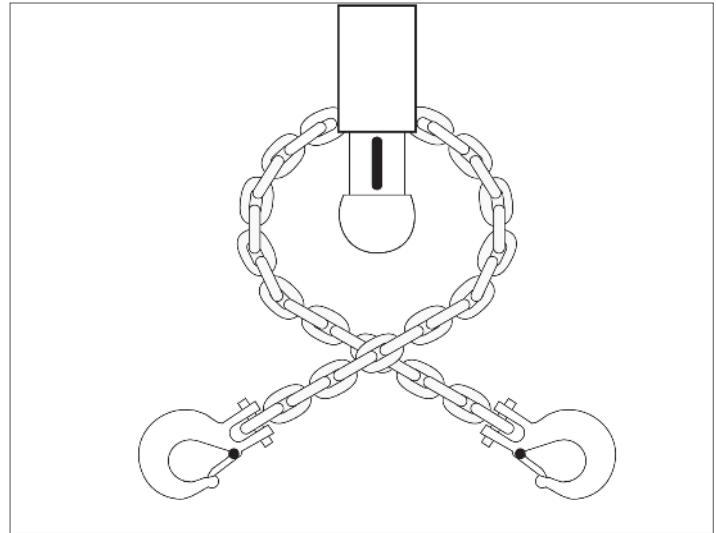
Keep clear when releasing drop legs.

7. Fully retract jack drop leg if equipped.

Go to Section 4.3.3 “Connect Safety Chains” to continue connecting trailer to tow vehicle.

4.3.3 CONNECT SAFETY CHAINS

1. Visually inspect safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
2. Safety chains must cross under coupler. Loop around a frame member of tow vehicle or to holes provided in hitch system. Do not attach to an interchangeable part of hitch assembly.
3. Attach hooks up from underneath the hole.
4. Provide enough slack in chains to permit tight turns, but not be close to road surface to drag.



WARNING

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

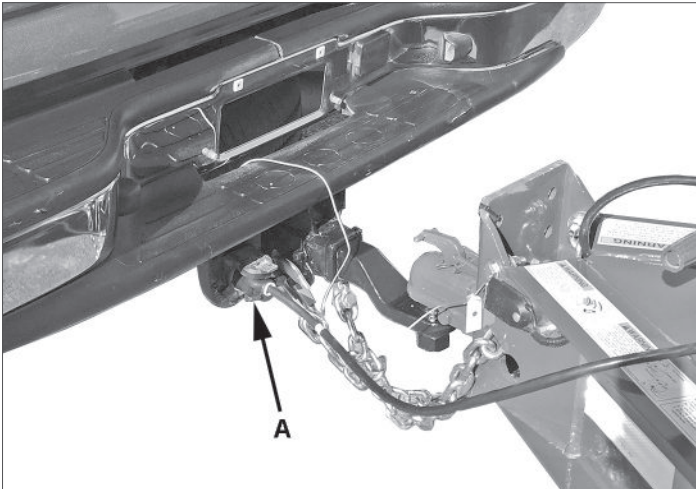
Cross chains underneath hitch and coupler with enough slack to permit turning and to hold tongue up, if trailer comes loose.

Fasten chains to frame of tow vehicle.

Do not fasten chains to any part of hitch unless hitch has holes or loops specifically for that purpose.

Coupling To Tow Vehicle

4.3.4 CONNECT ELECTRICAL CABLE



1. Connect trailer electrical cable (A) to tow vehicle 7-pin connector.
2. Check all lights for proper operation. Repair or replace non-working lights before towing trailer.

WARNING

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

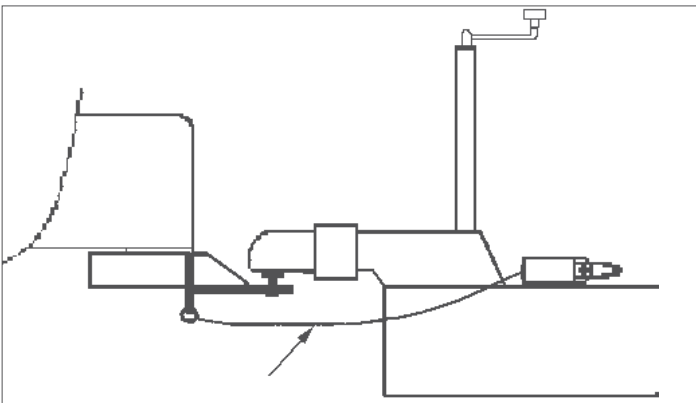
Before each tow:

- **Verify that electric brakes work.**
- **Verify all lights work.**

4.3.5 ATTACH BREAKAWAY BRAKE LANYARD

Connect lanyard to tow vehicle so that electric brake pullpin will be pulled out before all slack in safety chains is taken up.

Do not connect lanyard to a safety chain, hitch ball or hitch ball assembly.



4.3.6 TEST ELECTRIC BRAKES

Before towing trailer, verify that electric brakes operate.

While towing trailer at less than 5 mph, manually operate electric brake controller in tow vehicle. You should feel operation of trailer brakes.

If trailer brakes are not functioning, brake system must be evaluated to determine the problem. Corrective action must be taken before trailer is used.

Use this procedure each time before towing to check brake system operation.

4.3.7 TEST ELECTRIC BREAKAWAY BRAKES

Read and follow instructions here as well as instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, contact your dealer for assistance.

If trailer is not equipped with a hydraulic jack leg, breakaway kit battery will be used to provide power to breakaway brakes.

If trailer is equipped with a hydraulic jack leg, hydraulic pump battery will be used to provide power to breakaway brakes.

Trailer is setup to charge battery from tow vehicle. If the electrical system on your tow vehicle does not provide power to trailer battery, you must periodically charge battery.

CAUTION

Extreme hot and cold weather can degrade battery performance and cause brakes to not operate properly.

Check battery charge level before towing.

Do not tow trailer if battery requires recharging. A discharged battery will not activate brakes if trailer uncouples from tow vehicle. Battery must be fully charged before towing trailer.

Coupling To Tow Vehicle

WARNING

A depleted battery will not allow breakaway brakes to function if needed.

Battery must be charged before towing trailer.

To test battery, remove pullpin from switch and attempt to pull trailer forward. You should feel trailer resisting being towed, but wheels will not necessarily be locked. If brakes do not function, do not tow trailer until brake system is repaired.

Immediately replace pullpin. Battery discharges rapidly when pullpin is removed.

WARNING

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

Test the function of the breakaway brake system before towing trailer. Do not tow trailer if breakaway brake system is not working.

Connect breakaway lanyard to the tow vehicle, NOT to the safety chain, ball, pintle, hitch, or support.

Do not tow trailer with breakaway brake system ON. Brakes will overheat which can result in permanent brake failure.

WARNING

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

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

- Store battery indoors.
- Charge battery every three months or use a battery maintainer.

4.3.8 UNCOUPLE TRAILER

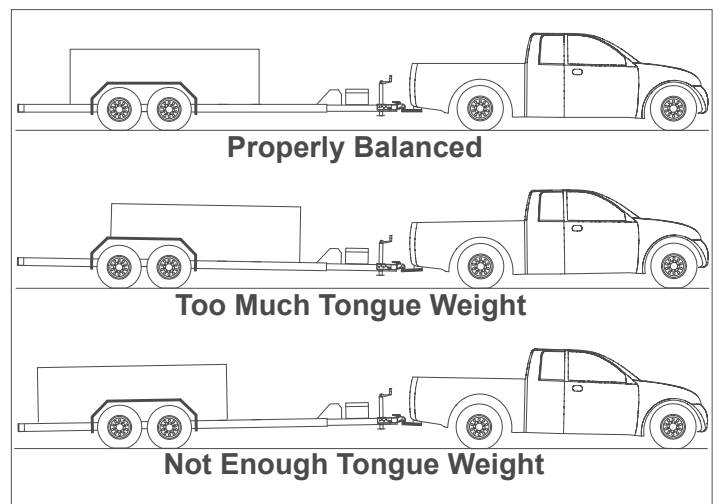
1. Park trailer on a firm level surface and block trailer tires.
2. Disconnect electrical connector.
3. Disconnect breakaway brake switch lanyard.
4. Disconnect safety chains from tow vehicle.
5. Unlock coupler and open it.
6. Before extending jack leg, make certain ground surface below jack pad will support tongue load.
7. If equipped, lower drop leg jack.
8. Press Up or Out button on controller or rotate jack handle to extend jack leg and transfer weight of trailer tongue to jack.
9. Raise trailer coupler above tow vehicle hitch.
10. Drive tow vehicle forward.

4.3.9 TONGUE WEIGHT

It is critical to have a portion of the trailer load carried by the tow vehicle.

The trailer tongue must exert a downward force on the hitch. The proper amount of tongue weight is necessary for the tow vehicle to be able to maintain control of the tow vehicle/trailer system. If there is not enough tongue weight, the rear wheel of the tow vehicle can lose traction or grip and cause loss of control. Also, even if there is some weight on the tongue, but not enough weight on the tongue, the trailer can become unstable at high speeds.

If there is too much tongue weight, tow vehicle is prone to jack-knife.



Coupling To Tow Vehicle

Tongue weight is necessary to insure that trailer axles do not exceed their Gross Axle Weight Rating (GAWR).

For example, a bumper pull trailer with a loaded weight of 6,000 pounds, should have 10-15% of 6,000 pounds (600-900 lbs.) on the hitch.

In the following table, the second column shows the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Vehicle Weight Rating, or GVWR) that appears on the VIN tag.

Tongue weight as a percentage of loaded trailer weight.	
Type of Hitch	Percentage
Ball Hitch (or Bumper Pull)	10-15%
	6-10% for smaller utility and cargo trailers.
Gooseneck Hitch	20-25%
Fifth Wheel Hitch	

The numbers quoted are for example purposes only and should be tailored to the specific trailer.

⚠ WARNING

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

Make certain that tongue weight is within the allowable range.

Be sure to:

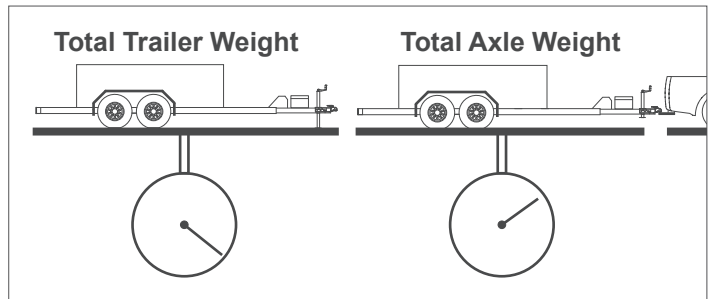
- **Distribute the load evenly, right and left.**
- **Keep the center of gravity low.**
- **Distribute the load front-to-rear to provide proper tongue weight.**

To check tongue weight:

Refer to following illustration. Pull trailer onto scale and uncouple it from the tow vehicle. See section 4.3.8.

Weigh trailer to get the total trailer weight. Re-connect trailer to tow vehicle and move so tow vehicle wheels are off scale, just leaving trailer wheels on scale. Weigh trailer.

Simply subtract the axle weight from the total weight to determine the tongue weight.



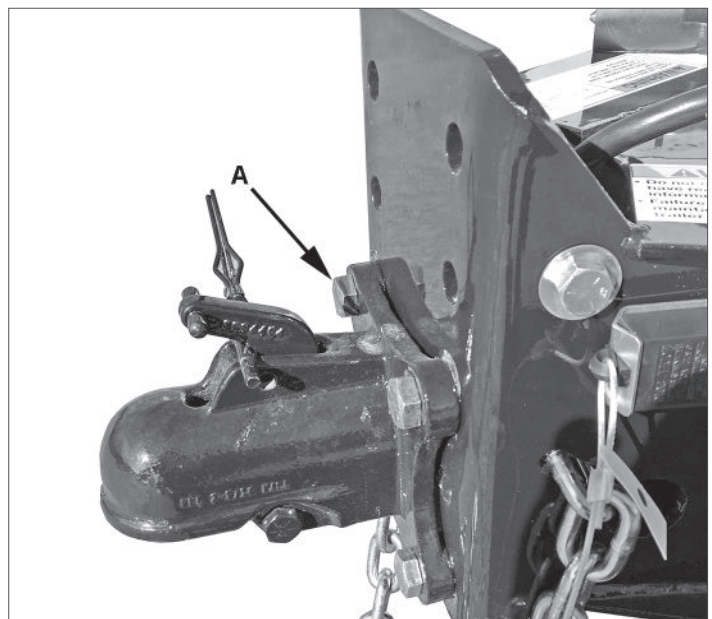
4.3.10 ADJUST HITCH HEIGHT

⚠ WARNING

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

Adjust the hitch height so that the loaded trailer is level.

1. Connect trailer to tow vehicle and load the trailer to rated capacity. See Loading And Unloading.
2. Park tow vehicle and trailer on a firm level surface.
3. Stand away and visually verify if trailer is level front-to-rear. If front of trailer is higher than rear, hitch must be raised. If front of trailer is lower than rear, hitch must be lowered.
4. Uncouple trailer from tow vehicle.
5. Remove four bolts (A), lock washers and nuts on hitch. If equipped with lock nuts, discard used lock nuts and install new. Inspect bolts for damage and replace if necessary.



Coupling To Tow Vehicle

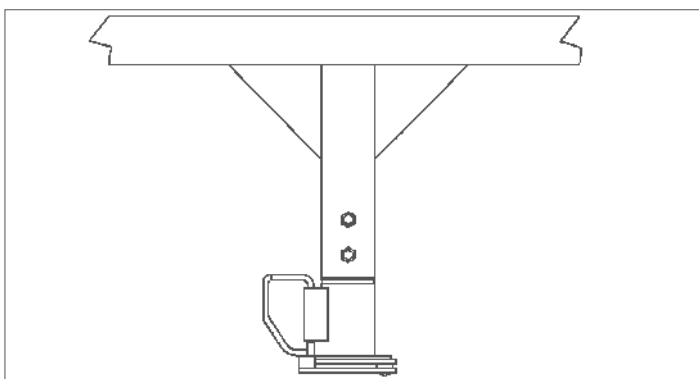
WARNING

NEVER re-use a lock nut.

Use new lock nuts each time the hitch height is adjust.

6. Raise or lower hitch as necessary. Always use four mounting holes and hardware to fasten hitch.
7. Install four bolts (A), lock washers and new lock nuts (if equipped).
8. Tighten to torque specified by your dealer.
9. Couple trailer to tow vehicle and verify that trailer is level front to rear. Adjust if necessary.
10. Unload trailer. See Loading And Unloading.

4.4 COUPLE GOOSENECK TRAILER TO TOW VEHICLE



The load rating of the coupler and the necessary ball size are listed on the gooseneck.

You must provide a ball and support for your tow vehicle, that meets or exceeds the GVWR of the trailer.

Ball and coupler must be the same size. If hitch ball is too small, too large, is underrated, is loose or is worn, trailer can come loose from tow vehicle, and may cause death or serious injury.

The tow vehicle, ball and support must have a rated towing capacity equal to or greater than the trailer gross vehicle weight rating (GVWR).

It is essential that the ball be the same size as the coupler.

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

4.4.1 BEFORE COUPLING TRAILER TO TOW VEHICLE

WARNING

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

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

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

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

WARNING

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

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

Replace worn or damaged hitch ball.

2. Rock ball to make sure it is tight to hitch, and visually check that hitch ball is solid against hitch frame.
Note: Hitch ball may be mounted with various methods. Refer to the hitch manufacturer specific instructions.
3. Wipe inside and outside of coupler clean and inspect for cracks and deformations; feel inside of coupler for worn spots and pits.
4. Be sure coupler is tight to gooseneck of trailer. All coupler fasteners must be visibly solid against trailer frame.

WARNING

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

Make sure gooseneck ball is tight to hitch before coupling trailer.

Coupling To Tow Vehicle

5. Raise bottom surface of coupler to be above top of gooseneck ball.

4.4.2 PREPARE COUPLER AND BALL

1. Lubricate ball and inside of coupler with a thin layer of automotive bearing grease.
2. If equipped, lower tow vehicle tailgate.
3. Remove safety latch pin and open coupler locking mechanism.
4. Slowly back up tow vehicle so that hitch ball is aligned under coupler.

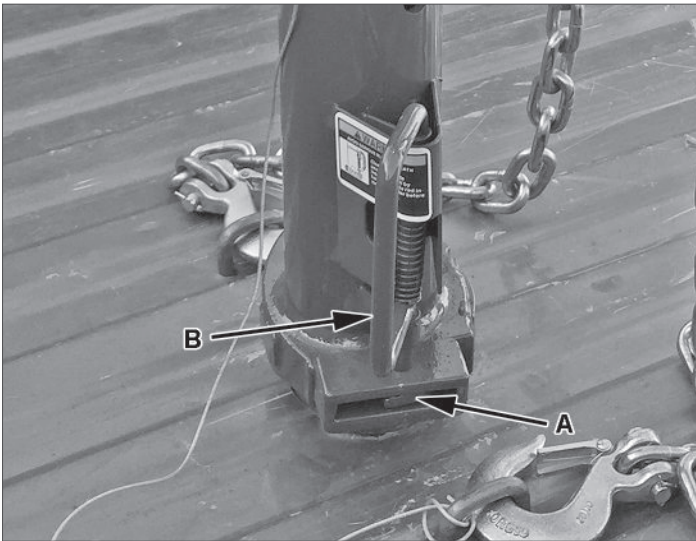
WARNING

No one must be under trailer or coupler during coupling.

Death or serious injury can occur if trailer drops.

4.4.3 COUPLE TRAILER TO TOW VEHICLE

1. Lower trailer tongue until coupler fully engages ball. If coupler does not line up with hitch ball, adjust position of tow vehicle.
2. Close latch plate (A) and engage coupler locking mechanism (B).



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

NOTICE

Jack can be damaged by overloading. Do not use jack to raise tow vehicle more than 1 inch.

4. If coupler cannot be secured to ball, do not tow trailer. Contact your dealer for assistance.
5. If equipped with a hydraulic jack, press Down or In button to retract jack. If equipped with a crank jack, turn jack handle to retract jack. Jack must be fully retracted.



CAUTION

Drop leg jacks may be spring loaded.

If so, they will rapidly return to the raise position when released.

Keep clear when releasing drop legs.

6. Fully retract jack drop leg if equipped.
7. Raise tow vehicle tailgate if equipped.

4.4.4 CONNECT SAFETY CHAINS

1. Visually inspect safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
2. Cross safety chains and attach to the safety chain receivers on tow vehicle. Do not attach safety chains to the gooseneck ball or its support.
3. Rig safety chains so they have sufficient slack to permit turning.

Coupling To Tow Vehicle



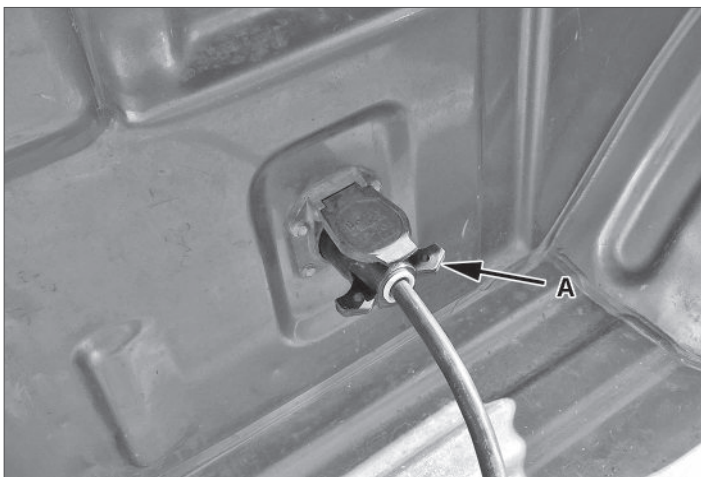
WARNING

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

Fasten chains to safety chain receivers on hitch, not to ball.

Have sufficient slack to permit turning and to keep gooseneck on bed of tow vehicle, if the trailer comes loose.

4.4.5 CONNECT ELECTRICAL CABLE



1. Connect trailer electrical cable (A) to tow vehicle 7-pin connector.
2. Check all lights for proper operation. Repair or replace non-working lights before towing trailer.

WARNING

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

Before each tow:

- Verify that electric brakes work.
- Verify all lights work.

4.4.6 ATTACH BREAKAWAY BRAKE LANYARD

Connect lanyard to tow vehicle so that electric brake pullpin will be pulled out before all slack in safety chains is taken up.

Do not connect lanyard to a safety chain, gooseneck ball or its support.



4.4.7 TEST ELECTRIC BRAKES

Before towing trailer, verify that electric brakes operate.

While towing trailer at less than 5 mph, manually operate electric brake controller in tow vehicle. You should feel operation of trailer brakes.

If trailer brakes are not functioning, brake system must be evaluated to determine the problem. Corrective action must be taken before trailer is used.

Use this procedure each time before towing to check brake system operation.

Coupling To Tow Vehicle

4.4.8 TEST ELECTRIC BREAKAWAY BRAKES

Read and follow instructions here as well as instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, contact your dealer for assistance.

If trailer is not equipped with a hydraulic jack leg, breakaway kit battery will be used to provide power to breakaway brakes.

If trailer is equipped with a hydraulic jack leg, hydraulic pump battery will be used to provide power to breakaway brakes.

Trailer is setup to charge battery from tow vehicle. If the electrical system on your tow vehicle does not provide power to trailer battery, you must periodically charge battery.

CAUTION

Extreme hot and cold weather can degrade battery performance and cause brakes to not operate properly.

Check battery charge level before towing.

Do not tow trailer if battery requires recharging. A discharged battery will not activate brakes if trailer uncouples from tow vehicle. Battery must be fully charged before towing trailer.

WARNING

A depleted hoist battery will not allow breakaway brakes to function if needed.

Hoist battery must be charged before towing trailer.

To test battery, remove pullpin from switch and attempt to pull trailer forward. You should feel trailer resisting being towed, but wheels will not necessarily be locked. If brakes do not function, do not tow trailer until brake system is repaired.

Immediately replace pullpin. Battery discharges rapidly when pullpin is removed.

WARNING

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

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

Connect breakaway lanyard to the tow vehicle, NOT to the safety chain, ball, hitch, or support.

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

WARNING

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

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

- Store battery indoors.
- Charge battery every three months or use a battery maintainer.

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

4.4.9 UNCOUPLE TRAILER

1. Park trailer on a firm level surface and block trailer tires.
2. Lower tow vehicle tailgate if equipped.
3. Disconnect electrical connector.
4. Disconnect breakaway brake switch lanyard.
5. Disconnect safety chains from tow vehicle.
6. Unlock the coupler and open it.
7. Before extending jack leg, make certain the ground surface below the jack pad will support the tongue load.

Coupling To Tow Vehicle

⚠ CAUTION

Drop leg jacks may be spring loaded.

If so, they will rapidly return to raised position when released.

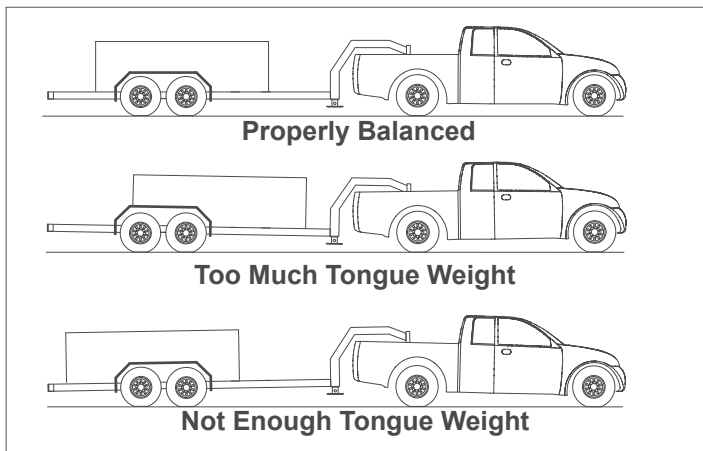
Keep clear when releasing drop legs.

8. If equipped, lower drop leg jack.
9. Press Up or Out button on controller or rotate jack handle to extend jack leg and transfer weight of trailer tongue to jack.
10. Raise trailer coupler above tow vehicle hitch.
11. Drive tow vehicle forward.

4.4.10 TONGUE WEIGHT

It is critical to have a portion of the trailer load carried by the tow vehicle.

If there is too much tongue weight, tow vehicle is prone to jack-knife.



Tongue weight is necessary to insure that trailer axle(s) do not exceed their Gross Axle Weight Rating (GAWR).

For example, a gooseneck trailer with a loaded weight of 6,000 pounds, should have 20-25% of 6,000 pounds (1200-1500 lbs.) on the hitch.

In the following table, the second column shows the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Vehicle Weight Rating, or GVWR) that appears on the VIN tag.

Tongue weight as a percentage of loaded trailer weight.

Type of Hitch	Percentage
Ball Hitch (or Bumper Pull)	10-15%
	6-10% for smaller utility and cargo trailers.
Gooseneck Hitch	20-25%
Fifth Wheel Hitch	

The numbers quoted are for example purposes only and should be tailored to the specific trailer.

⚠ WARNING

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

Make certain that tongue weight is within the allowable range.

Be sure to:

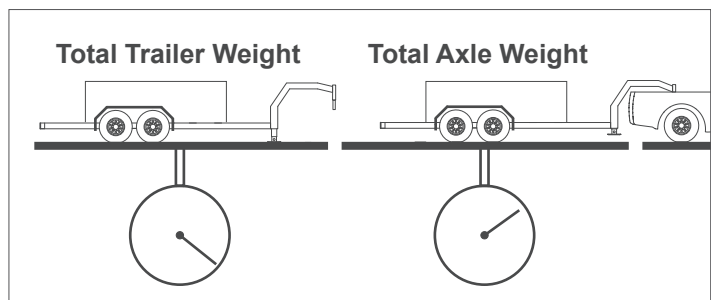
- **Distribute the load evenly, right and left.**
- **Keep the center of gravity low.**
- **Distribute the load front-to-rear to provide proper tongue weight.**

To check tongue weight:

Pull trailer onto scale and uncouple it from the tow vehicle. See section 4.4.8.

Weigh trailer to get the total trailer weight. Re-connect trailer to tow vehicle and move so tow vehicle wheels are off scale, just leaving trailer wheels on scale. Weigh trailer.

Simply subtract the axle weight from the total trailer weight to determine the tongue weight.



Coupling To Tow Vehicle

4.4.11 ADJUST GOOSENECK HEIGHT

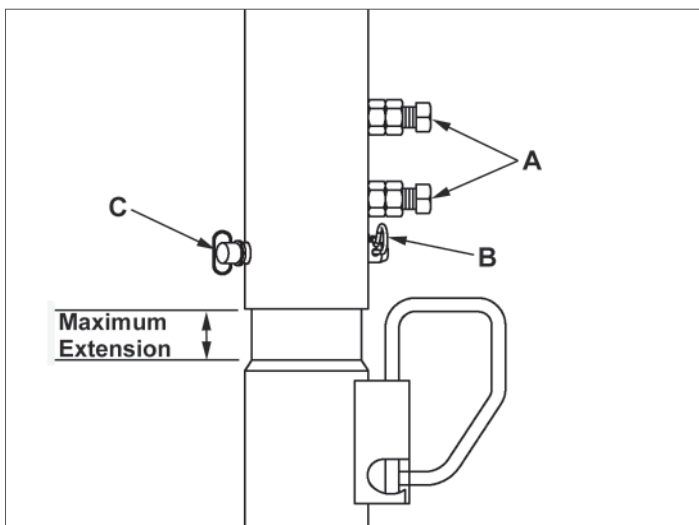
WARNING

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

Adjust the coupler height so that the loaded trailer is level.

1. Connect trailer to tow vehicle and load trailer to rated capacity. See Loading And Unloading.
2. Park tow vehicle and trailer on a firm level surface.
3. If front of trailer is higher than rear, hitch must be raised. If front of trailer is lower than rear, hitch must be lowered.
4. Uncouple trailer from tow vehicle.
5. Loosen jam nuts and set screws (A).
6. Remove retaining pin (B) and load bearing pin (C) if equipped.
7. Extend or retract coupler as needed up to the maximum specified by the manufacturer.
8. If equipped, fully insert load bearing pin (C) through one set of holes in coupler and outer tube. NEVER use a bolt or any other device as a replacement for load bearing pin (C).
9. Install retaining pin (B) on load bearing pin (C).
10. Tighten setscrews (A) to torque specified by the manufacturer.
11. Tighten jam nuts to torque specified by the manufacturer.
12. Check tightness after 50 miles of towing.

13. Couple trailer to tow vehicle and verify that trailer is level front to rear. Adjust if necessary.
14. Unload trailer. See Loading And Unloading.



Loading And Unloading

5. LOADING AND UNLOADING

To safely load a trailer, you must consider:

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

It is essential for safe towing that the trailer tongue and tow vehicle hitch carry the proper amount of the loaded trailer weight.

Load distribution must be such that no component part of the trailer is loaded beyond its rating.

Do not transport people, containers of hazardous substances, or flammable liquids. The exception is fuel in the tank of vehicles or equipment being hauled.

WARNING

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

The exception is fuel in the tank of vehicles or equipment being hauled.

WARNING

Do not transport people on trailer. Besides putting their lives at risk, the transport of people on a trailer is illegal.

5.1 LOAD TRAILER

1. Inspect the floor of the trailer.
2. Inspect the d-rings and stake pockets for damage or signs of bending before loading the trailer.

WARNING

Damaged or loose d-ring and retainers or stake pockets can break, allowing cargo to become loose.

Loose cargo can shift the center of gravity, and result in loss of control of the trailer.

Inspect and test d-rings and stake pockets before loading cargo.

Do not use a damaged or loose d-rings and retainers or stake pockets to secure cargo.

3. Couple the trailer to the tow vehicle.
4. Park the tow vehicle and trailer on a firm and level surface.
5. Clear the area around the trailer.

WARNING

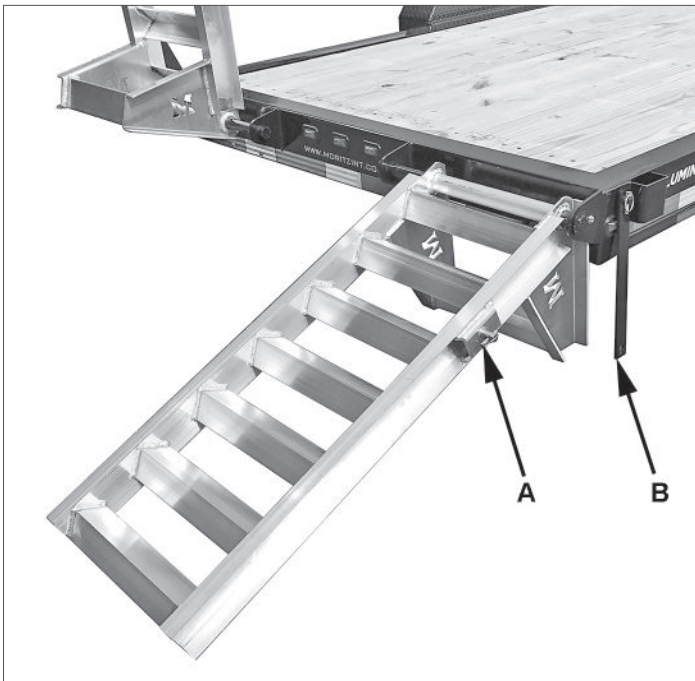
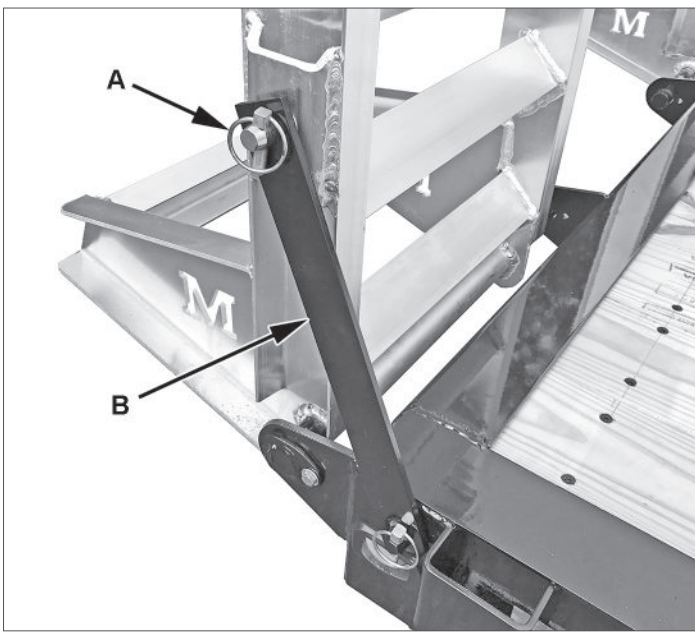
Trailer must be coupled to tow vehicle before loading trailer.

CAUTION

Use a safe lifting procedure to avoid injury when handling ramps.

6. Hold ramp to prevent ramp from falling and remove pin (A) and strap (B).
7. Lower ramp to ground. Repeat for other ramp.
8. Adjust ramp position to align with equipment tires or tracks.

Loading And Unloading



NOTICE

Ramps are rated for 8000 lbs. They will not support the load bearing capacity of the trailer.

9. Load cargo on trailer. Refer to section 4.3.9 to set up proper tongue weight.
10. Secure the load to the trailer using appropriate straps, chains and tensioning devices. Refer to www.fmcsa.dot.gov for regulations regarding cargo securement rules.
11. Raise ramps and install strap (B) and pin (A) on each ramp.

5.2 SECURING CARGO

Secure all cargo so it does not shift while trailer is being towed.

WARNING

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

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

WARNING

Load can suddenly move or topple, which can result in death or serious injury.

Do not load or unload trailer unless coupled to tow vehicle and is on a firm and level surface.

Loading And Unloading

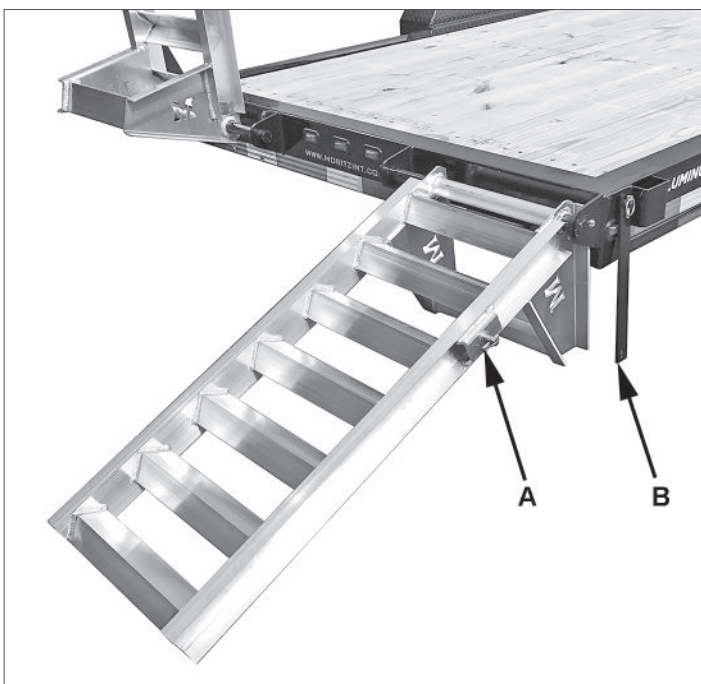
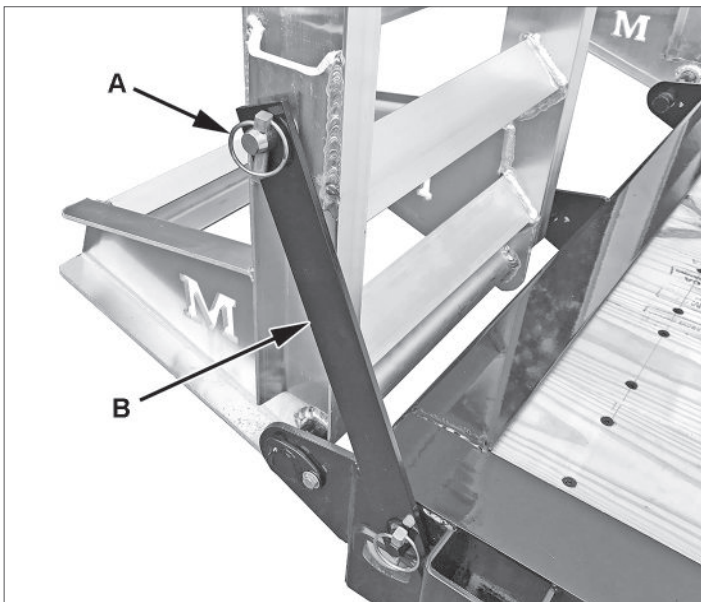
5.3 UNLOAD TRAILER

1. Couple the trailer to the tow vehicle.

WARNING

Trailer must be coupled to tow vehicle before unloading trailer.

2. Park the tow vehicle and trailer on a firm and level surface.
3. Clear the area around the trailer.
4. Remove chains, straps and tensioning devices.
5. Hold ramp to prevent ramp from falling and remove pin (A) and strap (B).



6. Lower ramp to ground. Repeat for other ramp.
7. Adjust ramp position to align with equipment tires or tracks.
8. Unload the cargo from trailer.
9. Raise ramps and install strap (B) and pin (A) on each ramp.

5.4 HYDRAULIC COMPONENTS (IF EQUIPPED)

Do not alter or substitute any hydraulic components.

Hydraulic system is designed with each component being compatible with the safe and reliable operation of the hydraulic system. **Do not alter hydraulic pressure or flow rate in the hydraulic system.**

Hydraulic system must be repaired and maintained by a qualified hydraulic technician.

Pre-Tow Checklist

6. PRE-TOW CHECKLIST

6.1 PRE-TOW CHECKLIST

1. Check tires, wheels and lug nuts.
2. Check tire pressure. Inflate tires to pressure stated on Certification / VIN label and/or tire sidewall.
3. Verify coupler is secured and locked.
4. Verify safety chains properly rigged to tow vehicle, not to hitch or ball.
5. Verify all lights work.
6. Test trailer brakes and breakaway brakes.
7. Verify safety breakaway lanyard is fastened to tow vehicle, not to safety chains.
8. Verify cargo properly loaded, balanced and tied down.
9. Check tongue weight and weight distribution set-up.
10. Verify ramps are secured for travel.

6.2 MAKE REGULAR STOPS

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

- Coupler secured.
- Safety chains are fastened and not dragging.
- Cargo secured.
- Tires are properly inflated.

Breaking In A New Trailer

7. BREAKING IN A NEW TRAILER

7.1 RETIGHTEN LUGS AT FIRST 10, 25 & 50 MILES

Wheel lugs must be checked after 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. Improper tightening of the lug nuts or bolts voids the axle warranty.

Refer to Inspection, Service and Maintenance section of this manual.



WARNING

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

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

7.2 ADJUST BRAKES

Brake shoes and drums experience a rapid initial wear.

Refer to axle manual for brake adjustment. If you do not have the axle and brake manual, contact your dealer for assistance.

7.3 SYNCHRONIZING BRAKE SYSTEMS

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



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.

For safe brake performance and synchronization, read and follow axle/brake and brake controller manufacturers' instructions. If you do not have these instructions, contact your dealer for assistance.

Accessories

8. ACCESSORIES

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 before operating the accessory.

8.1 ACCESSORY BATTERY

Trailer may equipped with a battery that operates the hydraulic pump or winch.

The battery may be kept charged either by the tow vehicle or by an auxiliary charger.

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

8.2 WINCH

Trailer may equipped with a winch. Refer to the winch manufacturers manual for safety and operational information.

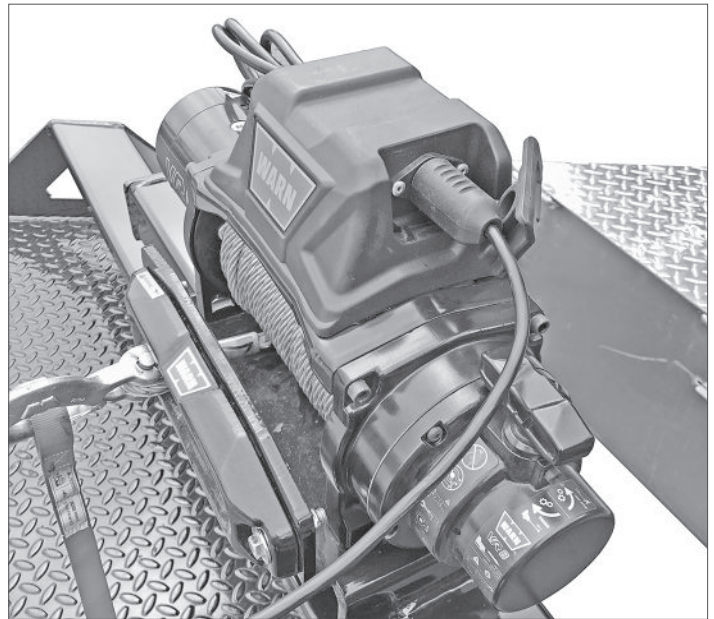
⚠ WARNING

Prevent bodily injury and/or equipment damage.

Winch mount is rated for 8000 lbs.

The use of a multi-part line increases pulling power of the winch, but does not increase weight rating of the winch mount.

Do not exceed weight rating of the winch mount.



Inspection, Service And Maintenance

9. INSPECTION, SERVICE AND MAINTENANCE

9.1 INSPECTION, SERVICE & MAINTENANCE SUMMARY CHARTS

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

Before Each Tow		
Item	Inspection/Service	Manual Section Reference
Breakaway Brakes	Check operation.	Section 4.
Breakaway Battery	Fully charged, connections clean.	Section 4.
Electric Brakes	Check operation.	Section 4.
Safety Chains And Hooks	Check for wear, damage.	Section 4.
Coupler And Hitch Ball	Check for cracks, pits, and flats. Replace w/ ball and coupler having trailer GVW Rating. Verify coupler and ball have a thin layer of grease. Check locking device & replace when worn.	Section 4 and 9. Section 4 and 9. Section 4 and 9.
Ring And Pintle	Check for cracks, pits, and flats. Replace w/ ring and pintle having trailer GVW Rating. Verify ring and pintle have a thin layer of grease. Check locking device & replace when worn.	Section 4 and 9. Section 4 and 9. Section 4 and 9.
Tires	Check tire pressure when cold. Inflate as needed. Check for damage.	Section 6 and 9 Section 6 and 9
Wheels - Lug Nuts Or Bolts & Hub	Check lug tightness. See axle manual for specifications. Tighten. For new and remounted wheels, check torque after first 10, 25 & 50 miles of driving and after any impact.	Section 6. Section 7 and 9.

Inspection, Service And Maintenance

Every 6 Months or 6,000 Miles		
Item	Inspection/Service	Manual Section Reference
Tires	Inspect tread and sidewalls thoroughly.	Section 9.
	Replace tire when treads are worn, when sidewall has a bulge, or sidewall is worn.	Section 9.
	Rotate every 5,000 Miles.	Section 9.
Safety Chains & Hooks	Check for wear, damage.	Section 4.
Coupler And Hitch Ball	Check for cracks, pits, and flats. Replace w/ ball and coupler having trailer GVW Rating.	Section 4.
	Grease.	Section 4 and 9.
	Check locking device and replace when worn.	Section 4 and 9.
Ring And Pintle	Check for cracks, pits, and flats. Replace w/ ring and pintle having trailer GVW Rating.	Section 4.
	Grease.	Section 4 and 9.
	Check locking device & replace when worn.	Section 4 and 9.

Every Year or 12,000 Miles			
Item	Inspection/Service	Manual Section Reference	
Jack, Drop-Leg (if equipped)	Grease gears at top.	See jack manual.	
Structure <ul style="list-style-type: none"> • Frame Members • Welds • Axle Attachment Bolts 	Inspect all frame members, bolts & rivets. Repair or replace damaged, worn or broken parts.	Section 9.	
		Inspect all welds. Repair as needed.	Section 9.
		Checked by dealer.	Section 9.
Wheels Rims	Inspect for cracks & dents. Replace as needed.	Section 9.	

Inspection, Service And Maintenance

9.2 INSPECTION AND SERVICE INSTRUCTIONS

WARNING

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

Have trailer professionally inspected annually and after any impact.

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

When jacking and using jack stands, place them so as to clear wiring, brake lines, and suspension parts (springs, torsion bars, etc.). Place jacks and jack stands under the outer frame rail to which the axles are attached.

WARNING

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

WARNING

Crushing hazard.

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

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

9.2.1 TRAILER STRUCTURE

Wash the trailer as needed with a power washer and a detergent solution.

9.2.1.1 FASTENERS AND FRAME MEMBERS

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

WARNING

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

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

9.2.1.2 WELDS

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

WARNING

Do not attempt to repair a cracked or broken weld unless you have the skills and equipment to make the repair.

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

See your dealer for weld repairs.

WARNING

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

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

Inspection, Service And Maintenance

9.2.2 TRAILER BRAKES

9.2.2.1 BRAKE SHOES AND DRUMS

Refer to the axle manufacturers manual for brake maintenance information.

9.2.2.2 ELECTRIC BRAKE CONTROLLER

The electric brakes must be “synchronized” so that braking is properly distributed to tow vehicle brakes and trailer brakes. For proper operation and synchronization, read and follow the axle/brake and the brake controller manufacturers manual. If you do not have this manual, contact your dealer for assistance.

9.2.3 TRAILER CONNECTION TO TOW VEHICLE

See coupler manufacturer’s manual for other inspection and maintenance procedures. If you do not have this manual, contact your dealer for assistance.

All bent or broken parts must be replaced before towing trailer.

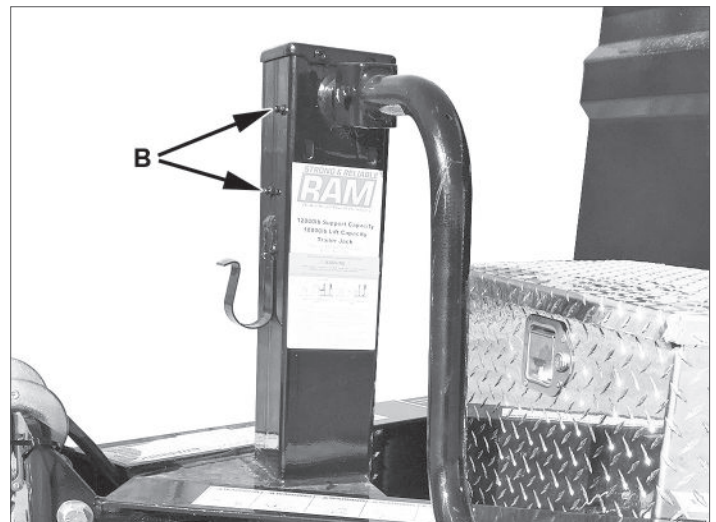
Latch mechanisms must be able to rotate freely.

Oil pivot points, sliding surfaces, and spring ends with SAE 30W motor oil. Keep ball pocket and latch mechanism clean.

When replacing a ball, ring, pintle or coupler, load rating must match or exceed trailer GVWR.

9.2.4 JACK

Pump grease into jack crank shaft zerk (A) and gear/shaft zerk (B).



Inspection, Service And Maintenance

9.2.5 LIGHTS AND SIGNALS

Before each tow, check all trailer lights for proper operation.



WARNING

To avoid risk of collisions, all lights must work.

9.2.6 WHEEL RIMS

Inspect rims for damage every year or after a hard impact. Replace any damaged rim.

9.2.8 TIRES

Verify tire pressure is at level indicated on tire sidewall or VIN label.


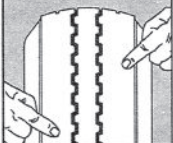
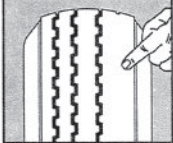
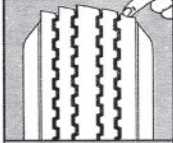
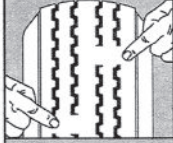
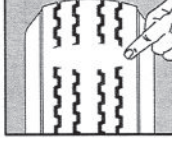
Tire pressure must be checked while tire is cold. Allow at least three hours for the tires to cool, if trailer has been towed for as much as one mile.

Replace tire if tread depth is less than 2/32 inch or telltale bands are visible.

Inspect side walls of each tire for bubble, cut or bulge.

Replace damaged tire before towing trailer.

If trailer will be stored for an extended period, inflate tires to maximum rated pressure indicated on sidewall or VIN label. Store them in a cool, dry place. Use covers to protect tires from the sun.

	Condition	Possible Cause	Remedy
	Even Center Wear	Over Inflation	Check & Adjust Pressure When Cold
	Inside & Outside Wear	Under Inflation	Check & Adjust Pressure When Cold
	Smooth, Side Wear - One Side	Loss of Camber or Overloading	Check & Unload As Necessary Have Alignment Checked
	"Feathering" Across The Face	Axle Not Square To Frame or Incorrect Toe In	Square Axles Have Alignment Checked
	Cupping	Loose Bearings or Wheel Balance	Check Bearing Adjustment and Wheel & Tire Balance
	Flat Spots	Wheel Lockup	Adjust Brakes

Tire Inspection Chart



WARNING

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

Check tires before each tow.

Inspection, Service And Maintenance

9.2.9 HYDRAULIC RESERVOIR OIL

Check fluid level prior to towing trailer.



Jack must be fully retracted before checking fluid level. Fill reservoir to full mark on the side of reservoir.

Use AW22 mineral based HVI (High Viscosity Index) oil.

9.2.10 LUG NUTS OR BOLTS

Lug nuts or bolts 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 or bolts are tight after the first 10, 25 and 50 miles of driving, and before each tow thereafter.

WARNING

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

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

WARNING

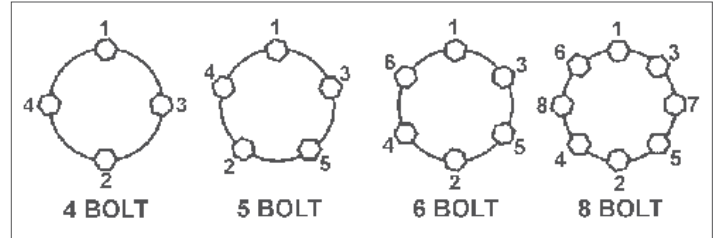
Metal creep between the wheel rim and lug nuts or bolts can cause rim to loosen.

Death or injury can occur if wheel comes off.

Tighten lug nuts or bolts before each tow.

Tighten the lug nuts or bolts in three stages to the final torque for the axle size on your trailer, to prevent wheels from coming loose. Tighten each lug nut or bolt in the order shown in the following figure.

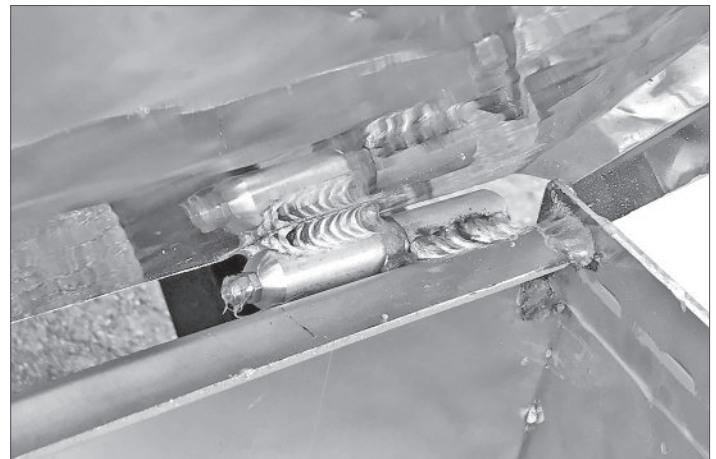
Use a calibrated torque wrench to tighten the fasteners. Verify that wheel studs are free of contaminants such as paint or grease, which may result in inaccurate torque readings. Over-tightening will result in breaking the studs or permanently deforming the mounting stud holes in the wheels, and will void the axle warranty.



See your axle manufacturers manual or your dealer for wheel nut or bolt torque specifications.

9.2.11 TOOLBOX

Pump grease into toolbox lid zerks.



9.3 ELECTRICAL

7-Pin Connector

