



TRAILERS | TRUCK BODIES

Equipment Trailer Owner's Manual



WARNING

This Owner's Manual contains safety information and instructions for your trailer. You must read this manual before loading or towing your trailer. You must follow all safety precautions and instructions.

M.H. Eby Inc.

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[M.H. Eby, Inc.](#)

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1. Introduction

Congratulations on the purchase of your M.H. Eby trailer. We are committed to providing our customers with a high-quality trailer designed for safe and reliable service.

Before operating, loading, or towing your trailer, read and understand this manual and all applicable safety instructions. If you have questions about your trailer or the information in this manual, contact your authorized M.H. Eby dealer. When requesting service, warranty assistance, or replacement parts, have the trailer's Vehicle Identification Number (VIN) available. The VIN is typically located on the roadside front rail.

This manual provides general safety, operating, inspection, and maintenance information for your trailer. Read, understand, and follow the applicable instructions provided by M.H. Eby, the tow vehicle manufacturer, the hitch manufacturer, and the manufacturers of installed components.

Additional component instructions and warranty information, including information for axles, brakes, tires, couplers, landing gear, hydraulic systems, and other installed equipment, may be provided separately or linked within this online manual. Retain access to all applicable documentation for future reference.

1.1 NATM



M.H. Eby participates in the National Association of Trailer Manufacturers' Compliance Verification Program. NATM conducts a biannual consultation of participating manufacturing facilities to review whether the manufacturer has processes in place to build trailers in accordance with applicable federal safety requirements and recommended industry practices.

The National Association of Trailer Manufacturers is the industry trade association for manufacturers for light- medium- duty trailers. The mission of NATM is to unify the light-medium- duty trailer manufacturing industry by improving trailer safety and performance; proactively addressing regulatory issues; enhancing the image of the industry; providing educational tools and events; and offering membership benefits and services

2. Safety

2.1 Safety Alert Symbols and Signal Words

An Owner's Manual that provides general trailer information cannot cover all 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 include components manufactured by various suppliers. Some components have separate instruction manuals. When this manual directs you to another manual and you do not have it, 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

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 WARNING

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

 CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 NOTICE

Indicates information considered important but not hazard-related.

2.2 Major Hazards

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

- Improperly matching the trailer and tow vehicle.
- Excessive Speed: Driving too fast for the 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

Trailers that weigh too much for the tow vehicle can cause stability problems, which can lead to death or serious injury. The additional strain put on the engine and drivetrain may lead to serious tow vehicle maintenance problems.

Do not exceed the maximum towing capacity of your tow vehicle. The towing capacity of your tow vehicle, in terms of maximum Gross Trailer Weight (GTW) and maximum Gross Combined Weight Rating (GCWR) can be found in the tow vehicle Owner's Manual.

DANGER

Use of an under-rated hitch, ball or tow vehicle can result in loss of control leading to death or serious injury. Make certain your hitch and tow vehicle are rated for your trailer.

2.2.2 Driving too Fast

Under ideal road, weather, traffic, loading, and vehicle conditions, **M.H. Eby recommends a maximum towing speed of 55 mph**. This is a manufacturer safety recommendation and is not a universal federal speed limit.

Never exceed the posted speed limit or any lower speed limit established by applicable law or specified by the tow vehicle, trailer, tire, wheel, axle, hitch, or other component manufacturer. Reduce speed as necessary for trailer loading, sway, traffic, road conditions, weather, visibility, and traction.

Excessive speed can cause trailer sway and loss of control. It can also cause tires to overheat, increasing the risk of tire failure or a blowout.

WARNING

Excessive towing speed can cause trailer sway, loss of control, tire overheating, or tire failure, resulting in death or serious injury.

M.H. Eby recommends towing at no more than 55 mph under ideal conditions. Never exceed the posted speed limit or any lower speed specified by applicable law or by the tow vehicle, trailer, tire, wheel, axle, hitch, or other component manufacturer. Reduce speed for load, traffic, road, weather, visibility, and traction conditions.



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 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 aware of trailer height, especially when approaching bridges, roofed areas and trees.
- 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 when driving a tow vehicle without a trailer.
- Anticipate the trailer “swaying.” Swaying can be caused by excessive steering, wind gusts, roadway edges, or by the trailer reaction to the pressure wave created by passing trucks and buses.
- 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 that the safety chains and emergency breakaway brake lanyard are correctly attached. Uncoupling may result in death or serious injury to you and to others.



! WARNING

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

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 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.

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 the hitch has holes or loops specifically for that purpose.

2.2.6 Proper Connection of Breakaway Brake

If equipped with brakes, your trailer will be equipped with a breakaway brake system that can apply the brakes on your trailer if your trailer comes loose from the hitch. You may have a separate set of instructions for the breakaway brake if the trailer is so equipped. The breakaway brake system, including battery, must be in good condition and properly rigged to be effective.

! 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 the 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 Tire and Wheel Inspection

Inspect all trailer tires before each tow. Replace a tire before towing if it has any of the following conditions:

- A bald or excessively worn area
- A bulge or other visible deformation
- Cuts, cracks, or punctures
- Exposed cords
- Any other visible damage that could make the tire unsafe

If a tire has uneven tread wear, have the trailer inspected by a qualified trailer service center. Uneven tread wear may be caused by incorrect tire inflation, tire or wheel imbalance, axle misalignment, overloading, or other mechanical conditions.

Tires with insufficient tread may not provide adequate traction, particularly on wet roadways. This can result in loss of control and death or serious injury.

Incorrect tire inflation increases tire wear and may reduce trailer stability. It can also cause excessive heat buildup and tire failure. Check the inflation pressure of every tire before each tow.

Inflate the tires to the cold inflation pressure shown on the Certification/VIN label, normally located on the left front side of the trailer. Check tire pressure when the tires are cold. For purposes of this inspection, tires are considered cold when the trailer has not been driven for at least three hours. NHTSA likewise recommends checking pressure after the vehicle has been stationary for at least three hours.



! WARNING

Incorrect tire pressure can cause tire failure, reduced trailer stability, or loss of control, resulting in death or serious injury.

Before each tow, inflate all tires to the cold inflation pressure specified on the Certification/VIN label.

2.2.8.1 Wheel-Fastener Inspection

Proper wheel-fastener torque is essential to keeping each wheel securely seated against the hub. Before each tow, inspect the wheel lug nuts or bolts and verify that they are tightened to the specified torque.

! WARNING

Wheel fasteners can loosen as the wheel and fasteners seat during use. Insufficient or improper wheel-fastener torque can allow a wheel to separate from the trailer, resulting in a crash and death or serious injury.

Check and tighten wheel fasteners as specified in this manual.

The required torque value and tightening sequence are listed in the **Inspection, Service, and Maintenance** section of this manual. Use a properly calibrated torque wrench and tighten the wheel fasteners in the specified crisscross or star pattern.

Damage or failure caused by improper wheel-fastener installation, tightening, or maintenance may not be covered under the applicable axle manufacturer's warranty. Refer to the axle manufacturer's warranty for complete terms and conditions.

Wheel fasteners are particularly prone to loosening after initial assembly or after a wheel has been removed and reinstalled. On a new trailer, and whenever a wheel has been reinstalled, check and retighten the wheel fasteners to the specified torque after the first:

- 10 miles
- 25 miles
- 50 miles

Thereafter, check the wheel-fastener torque before each tow and at the maintenance intervals specified in this manual.



! WARNING

Failure to check and properly tighten wheel fasteners after initial assembly or wheel reinstallation can result in wheel separation, a crash, and death or serious injury.

Retighten wheel fasteners to the specified torque after 10, 25, and 50 miles and check them before each tow.

2.2.9 Improper Loading

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

If you do not know the empty weight of the trailer plus the cargo weight, you must weigh the loaded trailer at a commercial scale. In addition, you must distribute the load in the trailer such that the load on any axle does not exceed the Gross Axle Weight Rating (GAWR).

If your trailer is equipped with a Tire & Loading Information Placard, mounted next to the Certification/VIN label, The cargo-capacity value shown on the Tire and Loading Information placard is based on the trailer's configuration when certified/built. Installed options, modifications, replacement components added after will change the number. The GVWR and GAWR are listed on the Certification/VIN label normally located on the front left side of the trailer.

! 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

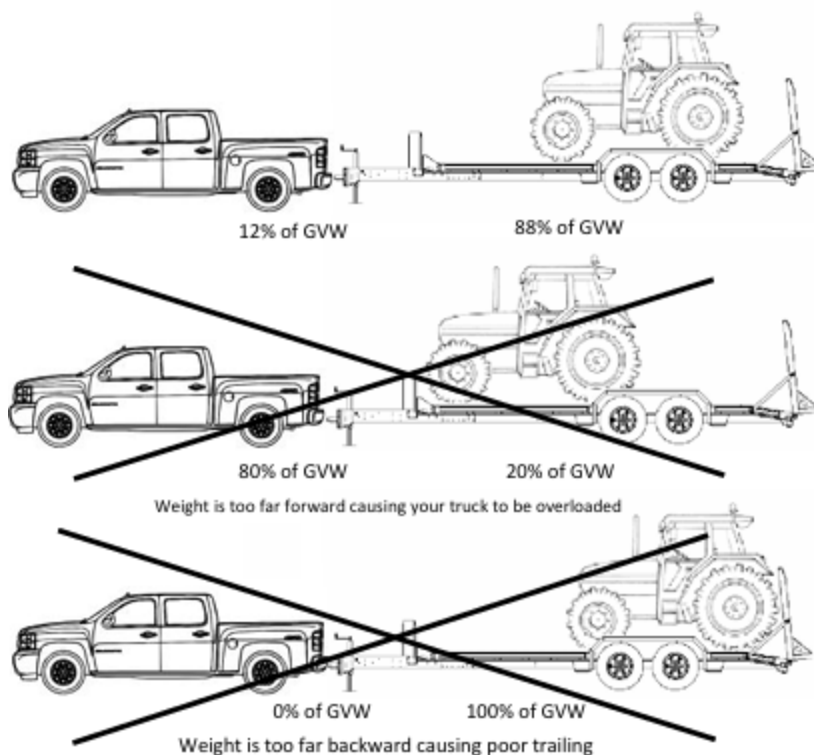
Improper front/rear load distribution can lead to an unstable trailer or poor tow vehicle handling. Poor trailer stability results from tongue weights that are too low, and poor tow vehicle stability results from tongue weights that are too high.

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 Trailer Weight, or "GTW") that should appear on the tongue of the trailer. For example, a large trailer with a loaded weight of 6,000 pounds, should have 10-15% of 6,000 pounds (600-900 lbs.) on the hitch.



Tongue Weight as a Percentage of Loaded Trailer Weight	
Type of Hitch	Percentage
Ball Hitch or	10-15% for large trailers
Ring & Pintle	6-10% for small trailers



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

for questions regarding the actual percent of tongue weight for the trailer, check with the manufacturer for specifics.

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 (see chart).

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 cause equipment failure or loss of trailer control and can lead to death or serious injury.

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

2.2.12 Inappropriate Cargo

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

! 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 on your trailer.

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



2.2.13 Inoperable Brakes or Lights

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes.

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

If your trailer has hydraulic “surge” brakes, pull the emergency breakaway brake lanyard to check the operation of the surge mechanism.

Be sure that the electric brakes and all the lights on your trailer are functioning properly before towing the trailer. Electric brakes and lights on a trailer are controlled via a connection to the tow vehicle, generally a multi-pin electrical connector.

WARNING

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

Before each tow:

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

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

2.2.14 Trailer Modifications

Unauthorized modifications may adversely affect trailer safety, regulatory compliance, performance, and warranty coverage. Contact M.H. Eby before modifying the trailer structure, hitch, running gear, suspension, brakes, hydraulic system, or electrical system.

2.2.15 Trailer Towing Guide

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

You will need to spend time adjusting to the different feel and maneuverability of the tow vehicle with a loaded trailer. Because of the significant differences in all aspects of maneuverability when towing a trailer, the hazards and risks of injury are also much greater than when driving without a trailer.



You are responsible for keeping your vehicle and trailer in control, and for all the damage that is caused if you lose control of your vehicle and trailer.

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

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

In an open area with little or no traffic, make several test stops from speeds no greater than 10 mph. If the trailer is equipped with a driver-adjustable brake controller, follow the brake-controller and tow-vehicle manufacturers' instructions to test and adjust the controller.

Use the controller's manual control to verify that the trailer brakes apply and provide firm, controlled braking without wheel lockup, jerking, or pulling to either side. Then apply the tow vehicle's brake pedal and verify that the tow vehicle and trailer stop smoothly as a combination. Adjust the controller as necessary so the trailer brakes provide adequate assistance without locking the trailer wheels or causing the trailer to push or pull against the tow vehicle.

Recheck the brake-controller setting whenever the trailer load changes significantly.

It will take practice to learn how to back up a tow vehicle with a trailer attached. Take it slow. Before backing up, get out of the tow vehicle and look behind the trailer to make sure that there are no obstacles.

Some drivers place their hands at the bottom of the steering wheel, and while the tow vehicle is in reverse, "think" of the hands as being on the top of the wheel. When the hands move to the right (counterclockwise, as you would do to turn the tow vehicle to the left when moving forward), the rear of the trailer moves to the right.

Conversely, rotating the steering wheel clockwise with your hands at the bottom of the wheel will move the rear of the trailer to the left, while backing up. Be careful not to allow the trailer to turn too much, because it will hit the rear of the tow vehicle. To straighten the rig, either pull forward, or turn the steering wheel in the opposite direction.

2.2.16 Safe Trailer Towing Guidelines

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

Check the lug nuts or bolts for tightness. Recheck the load tie-downs to make sure the load will not shift during towing.

Check coupler tightness after towing 50 miles.



If the trailer is equipped with a driver-adjustable brake controller, set and test the controller according to the brake-controller and tow-vehicle manufacturers' instructions. Adjust the controller so the trailer brakes apply promptly and provide smooth, balanced braking with the tow vehicle, without wheel lockup, jerking, or the trailer pushing or pulling against the tow vehicle. Recheck the setting whenever the trailer load changes significantly.

Use your mirrors to verify that you have room to change lanes or pull into traffic.

Use your turn signals well in advance.

Allow plenty of stopping space for your trailer and tow vehicle.

Use lower gears for climbing and descending grades.

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

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

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

- The coupler is secure to the hitch and is locked.
- Electrical connectors are made.
- There is appropriate slack in safety chains.
- There is appropriate slack in breakaway lanyard.
- The tires are not visibly low on pressure.
- The cargo is secure and in good condition.

Slow down for bumps in the road.

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

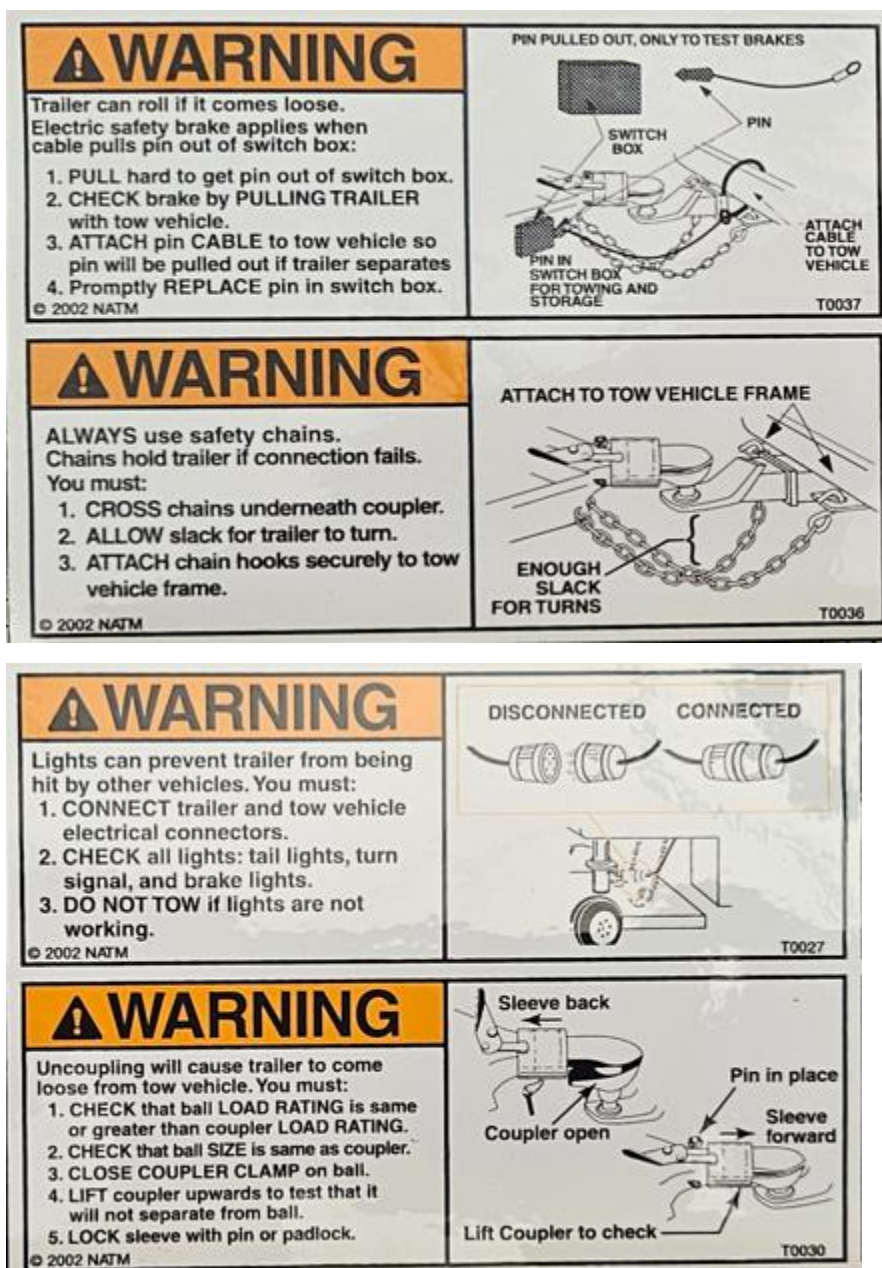
Do not tow at a speed that causes or contributes to trailer sway. Under ideal road, weather, traffic, loading, and vehicle conditions, **M.H. Eby recommends towing at 55 mph or less.** Never exceed the posted speed limit or any lower speed established by applicable law or specified by the tow vehicle, trailer, tire, wheel, axle, hitch, or other component manufacturer. Reduce speed as necessary for load, traffic, road, weather, visibility, and traction conditions.

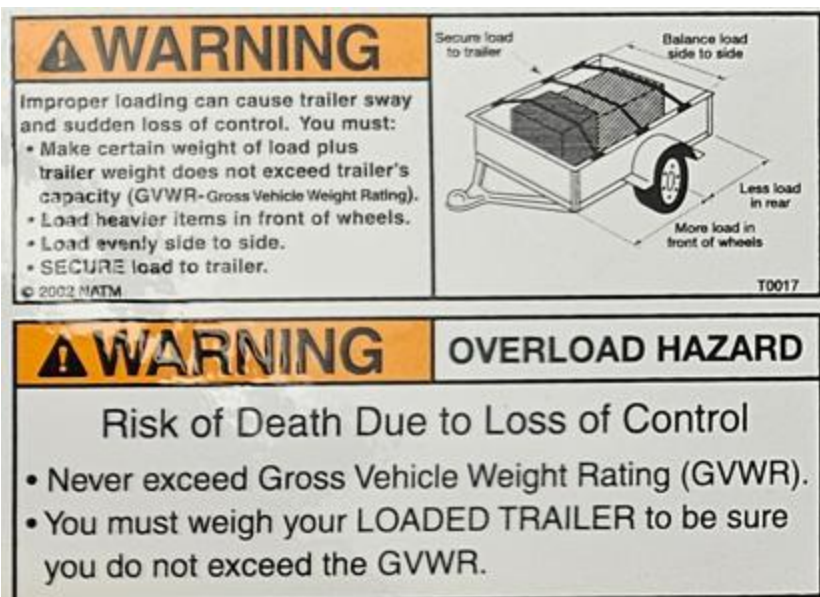
Allow plenty of room for passing. As a general rule, passing with a trailer may require approximately four times the distance needed without a trailer.



2.2.17 Safety Warning Labels on Your Trailer

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





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

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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

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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>.



3. Tire Safety Information

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 must carry a lot of weight all the time, even when not in use.

It is better for the tire to roll down the road than to be idle. During use, the tire releases lubricants that are beneficial to tire life. Using trailer tires often 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 time. In fact, tires can lose 1 to 3 PSI per month. This is because molecules of air, under pressure, weave their way from the inside of the tire, through the rubber, to the outside. A drop in tire pressure could cause the tire to become overloaded, leading to excessive heat buildup. If a trailer tire is under-inflated, even for a short period of time, the tire could suffer internal damage.

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

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

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



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 weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity.

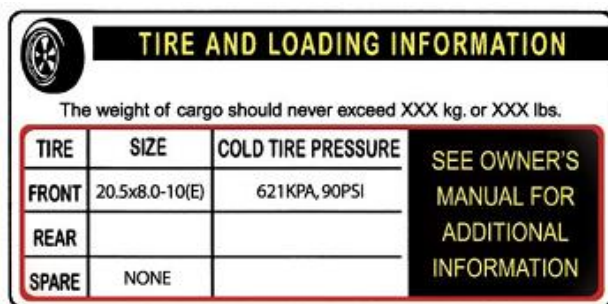
Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer cannot exceed the stated GVWR.

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

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



3.2.1 Trailers 10,000 Pounds GVWR or Less



- Tire and Load Decal

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 on 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.

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. $(1400 - 750 (5 \times 150) = 650 \text{ lbs.})$.
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 is towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicles' 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 (more than 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 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.

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

Inner liner separation: The parting of the inner liner from cord material in the carcass.

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

Light truck (LT) tire: A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles. 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, integrally 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 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 inner liner 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.) more than those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

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

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

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

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

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

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



Rim type designation: This means the 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 maybe any rim listed as appropriate for use with that tire.

Tread: That portion of a tire that contacts 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 are 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 is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

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

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

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

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

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

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

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

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 Owners' 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 tire pressure. These "missing" pounds of pressure are what you will need to add.
5. At a service station, add the missing pounds of air pressure to each tire that is under inflated.
6. Check all the tires to make sure they have the same air pressure except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is 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 Owners' 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 gripping action and traction that prevents your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built in tread wear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires.



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.

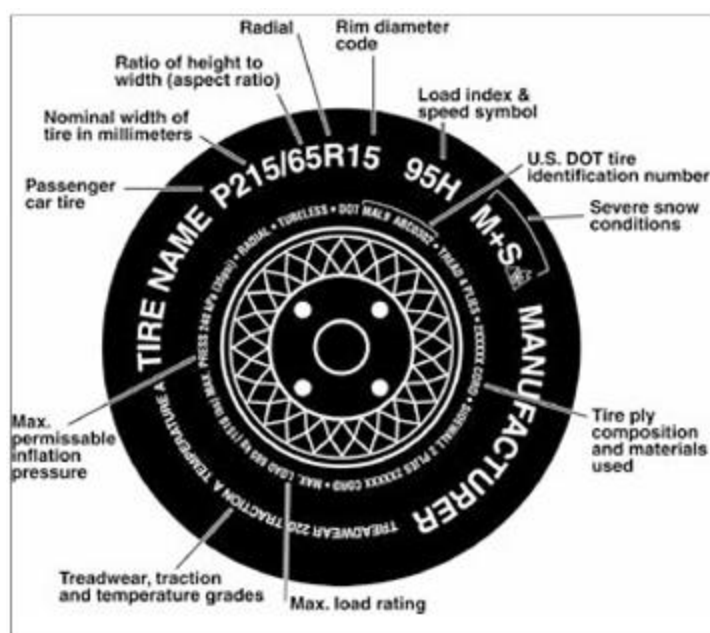
3.5.9 Tire Repair

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 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. 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 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 Owners' 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 mean 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 on the tire under normal driving conditions.

3.5.10.2 UTQGS Information

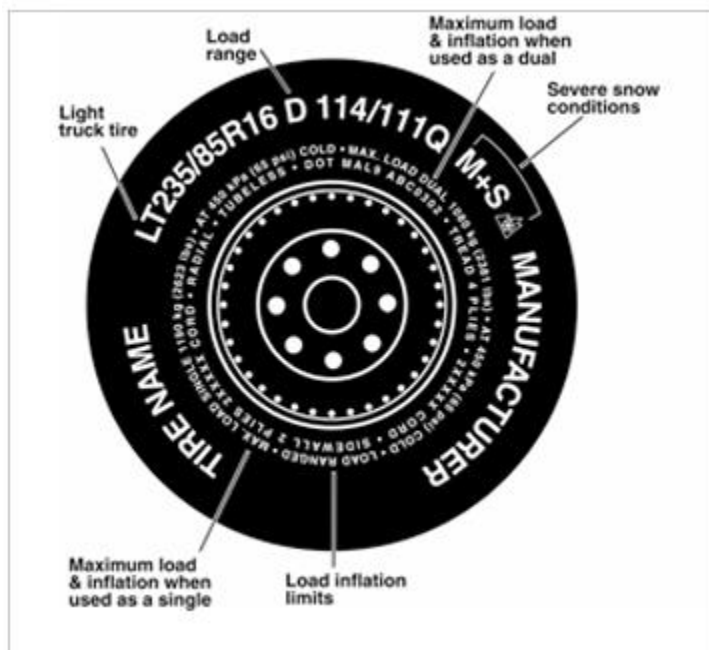
Treadwear Number: This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter: This letter indicates the 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.

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 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 carrying capabilities and its inflation limits.

3.5.10.4 Tire Safety Tips

Preventing Tire Damage

- Slow down if you must 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 Owners' Manual for the maximum recommended load for the vehicle.

4. Coupling to tow Vehicle

Follow all 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 the 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.

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



MANUFACTURER: Name of trailer manufacturer.

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

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

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

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

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

RIM SIZE: The rim size and load range for your trailer.

PSI: The tire air pressure (kPa / PSI) measured with tires cold.

VIN: The Vehicle Identification Number.

VEHICLE TYPE: Model or style of trailer.

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

4.1.2 tow Vehicle

When equipping a new vehicle or an older vehicle to tow a trailer, ask the vehicle dealer for advice on how to outfit the tow vehicle.

Vehicle manufacturers will provide you with the maximum towing capacities of their various models, as well as the GCWR. No amount of reinforcement will give a 100 horsepower, 2,500-pound truck the towing capacity that a 300 horsepower, 5,000-pound truck has.

4.2 Coupling and Uncoupling the Trailer

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

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



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

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

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

Trailer lighting (and braking) connector: A device that connects electrical power from the tow vehicle to the trailer. In addition, if your trailer has a separate brake system, the electrical connector will also supply power to the trailer brakes from the tow vehicle.

Breakaway switch: If the trailer becomes uncoupled from the tow vehicle, the breakaway switch lanyard, attached independently to the tow vehicle hitch, will pull a pin in the emergency electrical breakaway switch on the trailer. The breakaway switch is activated by a battery on the trailer to energize the trailer brakes independently of the towing vehicle.

It is important to check the state of charge of the emergency breakaway battery before each trip. Simply pull the pin out of the switch by hand and then try to pull the trailer. If you feel a significant drag force the brakes are activated. Be sure to re-insert the pin in the breakaway switch. Also be sure to allow enough slack in the breakaway brake lanyard such that the switch will only activate (pin pulls out) if the coupler connection comes loose.

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



! 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.

4.3 Couple Trailer to tow Vehicle

The trailer may be equipped with a ball hitch coupler or a ring & pintle coupler. See the appropriate section for the coupler on your trailer.

4.3.1 Ball Hitch Coupler

A ball hitch coupler connects to a ball that is located on or under the rear bumper of tow vehicle.

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

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

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

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

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

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



4.3.1.1 Before Coupling Trailer to tow Vehicle

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

WARNING

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

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

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

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

WARNING

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

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

Replace worn or damaged hitch ball.

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

4. Wipe the inside and outside of the coupler clean and inspect it visually for cracks and deformations; feel the inside of the coupler for worn spots and pits.

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

WARNING

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

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

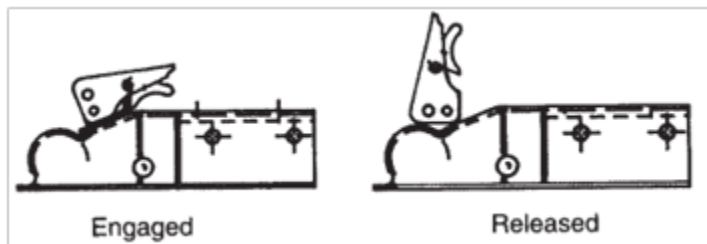
6. Raise the bottom surface of the coupler to be above the top of the hitch ball.

4.3.1.2 Prepare Coupler and Hitch

1. Lubricate hitch ball and inside of coupler with a thin layer of automotive bearing grease.



2. Remove safety latch pin and open coupler locking mechanism. In the open position, coupler can drop fully onto hitch ball. See the coupler instructions for details of placing the coupler in the "open" position.
3. Slowly back up tow vehicle so that hitch ball is near or aligned under coupler. Your trailer may be equipped with a different style coupler. If so, see the coupler manufacturers operating instructions.



4.3.1.3 Couple Trailer to tow Vehicle

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

NOTICE

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

5. If the coupler cannot be secured to the hitch ball, do not tow the trailer. Contact your dealer for assistance.
6. Lower the trailer so that its entire tongue weight is held by the hitch and continue retracting the jack to its fully retracted position.

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

A ring on the trailer connects to the pintle that is located on or under the rear bumper of tow vehicle.

We have utilized a ring that is suitable for the size and weight of the trailer. The load rating of the ring and the necessary pintle size are listed on the trailer tongue.

You must provide a pintle for your tow vehicle, where the load rating of the hitch and pintle is equal to or greater than that of your trailer. The pintle size must be the same as the ring size. If the pintle is too small, too large, is underrated, is loose or is worn, the trailer can come loose from the tow vehicle and may cause death or serious injury.

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

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

The pintle size and load rating (capacity) are marked on the pintle; ring capacity is marked on the ring.

4.3.2.1 Before Coupling Trailer to tow Vehicle

1. Be sure the size and rating of pintle match the size and rating of the ring. Hitch ring and pintles are marked with their size and rating.

WARNING

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

Be sure the LOAD RATING of the pintle is equal or greater than the load rating of the ring.

Be sure the SIZE of the pintle matches the size of the ring.

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

WARNING

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

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

Replace worn or damaged pintle.



3. Rock the pintle to make sure it is tight to the hitch and visually check that the pintle fasteners are solid against the hitch frame.
4. Wipe the inside and outside of the ring clean and inspect it visually for cracks and deformations; feel the inside of the ring for worn spots and pits.
5. Be sure the ring is tight to the tongue of the trailer. All ring fasteners must be visibly solid against the trailer frame.

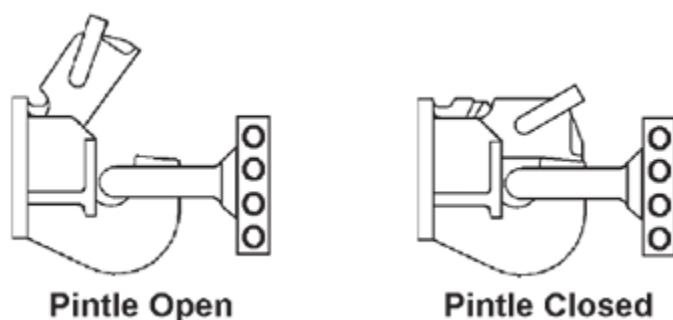
! WARNING

A loose pintle can result in uncoupling, leading to death or serious injury.
Make sure the pintle is tight to the hitch before coupling the trailer.

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

4.3.2.2 Prepare Ring and Pintle

1. Lubricate the inside of the pintle with a thin layer of automotive bearing grease.
2. Remove the safety latch pin and open the pintle locking mechanism.
3. In the open position, the ring can drop fully onto the pintle.



4. See the coupler instructions for details of placing the pintle in the “open” position.
5. Slowly back up the tow vehicle so that the pintle is aligned under the ring.

4.3.2.3 Couple Trailer to tow Vehicle

1. Lower the trailer tongue until the ring fully engages the pintle. If the ring does not line up with the pintle, adjust the position of the tow vehicle.
2. Close pintle and engage the pintle locking mechanism. In the engaged position, the locking mechanism securely holds the ring to the pintle.
3. Insert the safety lock pin through the hole in the locking mechanism.
4. Be sure the ring is all the way on the pintle, and the locking mechanism is engaged. A properly engaged locking mechanism will allow the pintle to raise the rear of the tow



vehicle. Using the trailer jack, test to see that you can raise the rear of the tow vehicle by 1 inch, after the pintle is closed and locked.

 NOTICE

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

5. If the ring cannot be secured to the pintle, do not tow the trailer. Contact your dealer for assistance.

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

 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 the safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.

2. Safety chains must crisscross under the coupler so

if the trailer uncouples, the safety chains can hold

the tongue up above the road. Loop around a frame

member of the tow vehicle or holes provided

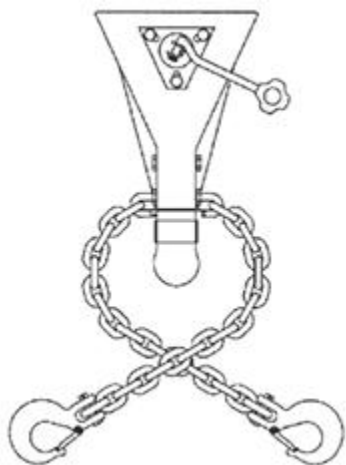
in the hitch system, but do not attach them to an

interchangeable part of the hitch assembly.

3. Attach hooks up from underneath the hole. Do not just drop into hole.

4. Provide enough slack in chains to permit tight turns, but not be close to the road surface to drag.



**! WARNING**

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

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 the hitch has holes or loops specifically for that purpose.

4.3.4 Connect Electrical Cable

1. Connect the trailer lights to the tow vehicles' electrical system using trailer electrical cable.
2. Check all lights for proper operation. Repair or replace non-working lights before towing trailer.
3. Check electric brakes for proper operation using brake controller mounted in the cab.



! WARNING

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

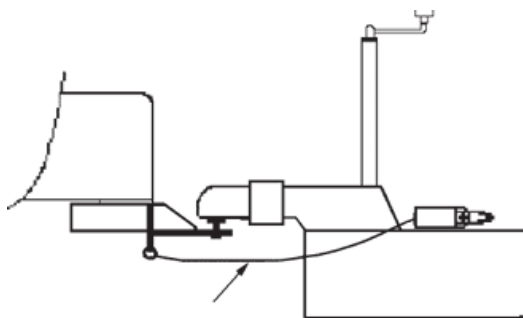
Before each tow:

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

4.3.5 Attach Breakaway Brake Lanyard

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

Connect the lanyard to the tow vehicle so that the hydraulic actuator will engage or the electric brake pull pin will be pulled out before all of the slack in the safety chains is taken up. Do not connect the lanyard to a safety chain, hitch ball or hitch ball assembly. This would keep the breakaway brake system from operating when it is needed.



4.3.5.1 Test Electric Brakes

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer on the road, you must operate the brake controller while trying to pull the trailer to confirm that the electric brakes operate.

While towing the trailer at less than 5 mph, manually operate the electric brake controller in the tow vehicle. You should feel the operation of the trailer brakes. If the trailer brakes are not functioning, the brake system **MUST** be evaluated to determine the cause of the problem and corrective action **MUST** be taken before the trailer is used. Take the unit to your dealer or a qualified brake specialist.

Use this procedure each time you tow the trailer to check brake system operation.



4.3.5.2 Test Electric Breakaway Brakes

The breakaway brake system includes a battery, a switch with a pull pin and lanyard, and a breakaway brake controller. Read and follow the instructions here as well as the instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, contact your dealer for assistance.

Hydraulic tilt trailers may use the hoist battery to provide power to the breakaway brakes. If your trailer is not set up this way, there will be a small breakaway battery mounted near the breakaway switch.

Most trailers are set up to charge the battery from the tow vehicle. If the electrical system on your tow vehicle does not provide power to the battery, you must periodically charge the battery with a commercial battery charger to keep the battery charged.

CAUTION

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

Check battery charge level before towing.

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

to test the breakaway brake battery, remove the pull pin from the switch and attempt to pull the trailer forward. You should feel the trailer resisting being towed, but the wheels will not necessarily be locked. If the brakes do not function, do not tow the trailer until brakes, or battery, are repaired.

Immediately replace the pull pin. The breakaway brake battery discharges rapidly when the pull pin 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, pintle, hitch, or support.



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

! WARNING

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

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

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

Replace the break-a-way battery according to the intervals specified by battery manufacturer.

4.3.5.3 Test Surge Brakes (If Equipped)

Hydraulic surge actuator systems provide automatic and smooth trailer braking without special application by the tow vehicle driver. While this is extremely convenient it can sometimes be difficult to determine if the surge setup is functioning properly. The following steps provide a quick field test to confirm that the trailer brake system is operational.

! WARNING

The field test procedure indicates only if the trailer brake system is functional but DOES NOT provide information on how efficiently it will operate.

Regular inspection, maintenance, and adjustment of all brake system components (including the surge actuator, tubing, hoses, brake clusters, drums, and associated hardware/support structure) are still required to ensure maximum brake performance and smooth, even brake operation.

Move the trailer to flat, level ground, pulling FORWARD several feet before parking. This forward motion will ensure trailers equipped with free-backing brakes are in their normal operating mode. Disconnect the trailer from the tow vehicle and jack up the trailer's tongue until it is horizontal. Hook the trailer's safety chains (NOT the actuator's breakaway cable) together to form a loop, which is centered below the actuator's coupler. Place wheel blocks two feet behind the trailer to prevent a runaway trailer.

Place a sturdy board, such as a 2-inch by 4-inch piece of lumber, into the chain loop below the coupler.

The board should be 4 feet or longer so it will extend several feet above the actuator. Keep the end of the board a few inches off the ground and position it to press against the front end of the actuator's coupler. Press the board towards the rear of the trailer.



Keep pressing the top of the board to stroke the actuator and its internal master cylinder. If the trailer brake system is operational, the brakes will apply and keep the trailer from rolling away from you. Properly adjusted uni-servo or duo-servo type brakes will prevent you from moving the trailer back more than a few inches. Free-backing type brakes will initially provide rolling resistance, but continued force on the board will switch them into free-backing mode, and you'll be able to move the trailer backwards.

If you have uni-servo or duo-servo brakes and stroking the actuator (as described above) causes the trailer to roll away from you freely or with only minimal resistance, the brakes are NOT applied properly. If you have free backing brakes and stroking the actuator (as described above) causes the trailer to roll away without initial resistance, then the brakes are NOT applying properly. The brake system MUST be evaluated to determine the cause of the problem and corrective action MUST be taken before the trailer is used. Use this procedure each time you tow your trailer to check your surge brake system operation.

4.3.5.4 Test Surge Breakaway System

Before towing, check that the breakaway lever and lanyard are properly positioned. If the breakaway lever and lanyard are not located correctly due to either the lanyard being pulled during use or by accident, it MUST be reset prior to the trailer being moved. See the Surge Brake Actuator manual for the correct resetting and testing procedure.

WARNING

The breakaway system is designed to operate if the trailer separates from the tow vehicle. DO NOT use the breakaway system as a parking brake.

4.4 Uncouple Trailer

Follow these steps to uncouple trailer from the tow vehicle:

1. Park the 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 the coupler and open it.
6. Before extending jack, make certain the ground surface below the jack pad will support the tongue load.
7. Rotate jack handle to extend the jack and transfer the weight of the trailer tongue to the jack.
8. Raise the trailer coupler above the tow vehicle hitch.



9. Drive tow vehicle forward.

4.5 tongue Weight

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

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

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

In the following table, the second column shows the rule of thumb percentage of total weight of the trailer plus its cargo (Gross Trailer Weight, or "GTW") that should appear on the tongue of the trailer. for example, a large trailer with a loaded weight of 6,000 pounds, should have 10-15% of 6,000 pounds (600-900 lbs.) on the hitch.

Tongue Weight as a Percentage of Loaded Trailer Weight	
Type of Hitch	Percentage
Ball Hitch or Ring & Pintle	10-15% for large trailers 6-10% for small trailers

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

for questions regarding the actual percent of tongue weight for the trailer, check with the manufacturer for specifics.



! WARNING

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

Make certain that 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 (see chart).

4.5.1 Checking tongue Weight

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

Take the trailer to a truck stop or grain elevator where there is a “certified” scale. Place the tow vehicle only onto the scale and get the weight. This weight must be less than your tow vehicle’s GVWR.

Pull the trailer onto the scale and uncouple it from the tow vehicle, leaving just the trailer on the scale. Get a ticket which lists the total trailer weight. Re-connect the trailer to your tow vehicle and drive the tow vehicle wheels off the scale, just leaving the trailer axles on the scale. Get a “ticket”, which lists the trailer’s axle weight. Simply subtract the axle weight from the total weight to determine the hitch weight.

While you are at the scale, you should weigh the entire combination vehicle. This result should be less than the Gross Combined Weight Rating (GCWR) for your towing vehicle. Some scales allow you to get individual axle weights also. If this is possible, get the tow vehicles front and rear axle weights to make sure they are in the same proportion as the tow vehicle alone, and that the rear axle is not overloaded.

4.6 Adjust Hitch Height (If Equipped)

The height of the hitch on the trailer must be adjusted so that the trailer, when loaded to rated capacity, is level while connected to the tow vehicle. A level trailer allows equal weight distribution on the axles.

Your dealer or a trailer service center can perform this adjustment, or you can use the following steps to adjust the hitch height yourself.

If the trailer is not equipped with an adjustable hitch, an offset ball mount may be available from your hitch manufacturer.



! 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 the tow vehicle and trailer on a firm level surface.
3. Stand away from the trailer and visually verify if the trailer is level front-to-rear. If the front of the trailer is higher than the rear, the hitch must be raised. If the front of the trailer is lower than the rear, the hitch must be lowered.
4. Uncouple trailer from tow vehicle. See Coupling and Uncoupling.
5. Remove the lock nuts and bolts (1) on hitch. Discard lock nuts. Inspect bolts for damage and replace if necessary. Contact your dealer for the correct size and grade of bolts.

! WARNING

Used lock nuts are prone to loosen, resulting in the hitch separating from the trailer, which can lead to death or serious injury.

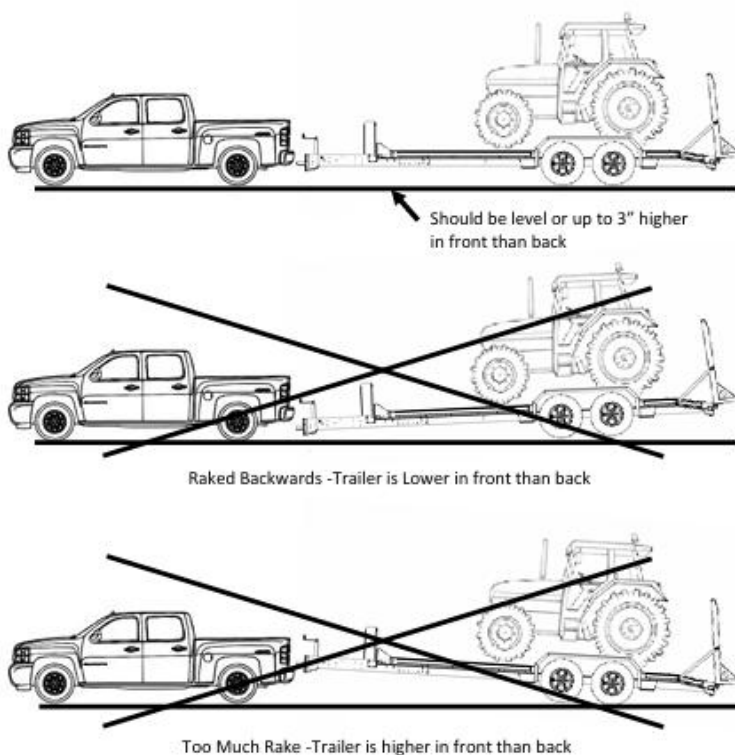
NEVER re-use a lock nut.

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

Contact your dealer for the proper grade and size of lock nut.

6. Raise or lower the hitch as necessary.
7. Install bolts and new lock nuts.
8. Tighten lock nuts to torque specified by your dealer.
9. Couple the trailer to the tow vehicle and verify that the trailer is level front to rear. Adjust if necessary. Should be level or up to 3" higher in front than rear of trailer
10. Unload trailer. See Loading and Unloading.





5. Coupling to Tow Vehicle – Gooseneck

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

5.1 Tow Vehicle and Hitch

If the 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.



5.1.1 Trailer Information

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

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

MANUFACTURER: Name of trailer manufacturer.

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

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

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

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

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

RIM SIZE: The rim size and load range for your trailer.

PSI: The tire air pressure (Kilopascals / Pounds per Square Inch) measured with tires cold.

VIN: The Vehicle Identification Number.

VEHICLE TYPE: Model or style of trailer.

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

5.1.2 Tow Vehicle

When equipping a new vehicle or an older vehicle to tow a trailer, ask the vehicle dealer for advice on how to outfit the tow vehicle. Vehicle manufacturers will provide you with the maximum towing capacities of their various models, as well as the GCWR. No amount of reinforcement will give a 100 horsepower, 2,500-pound truck the towing capacity that a 300 horsepower, 5,000-pound truck has.

5.2 Coupling and Uncoupling the Trailer

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



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

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

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

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

Trailer lighting (and braking) connector: A device that connects electrical power from the tow vehicle to the trailer. In addition, if your trailer has a separate braking system, the electrical connector will also supply power to the trailer brakes from the tow vehicle.

Breakaway switch: If the trailer becomes uncoupled from the tow vehicle, the breakaway switch lanyard, attached independently to the tow vehicle hitch, will pull a pin in the emergency electrical breakaway switch on the trailer. The breakaway switch is activated by a battery on the trailer to energize the trailer brakes independently of the towing vehicle.

It is important to check the state of charge of the emergency breakaway battery before each trip. Simply pull the pin out of the switch by hand and then try to pull the trailer. If you feel a significant drag force the brakes are activated. Be sure to re-insert the pin in the breakaway switch. Also be sure to allow enough slack in the breakaway brake lanyard such that the switch will only activate (pin pulls out) if the connection comes loose.

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

WARNING

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

- Receiver 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

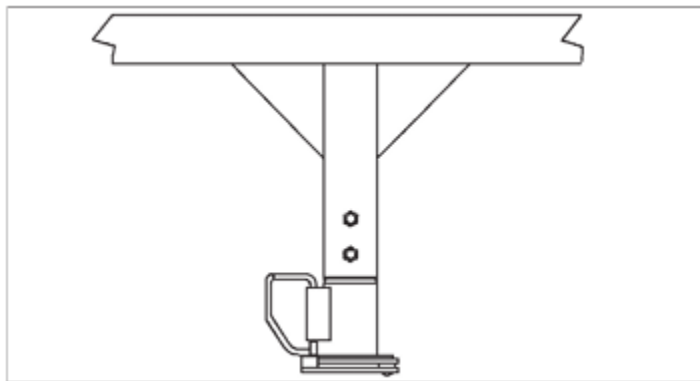


5.3 Couple Trailer to Tow Vehicle

The trailer may be equipped with a ball receiver, fifth wheel or king pin. See the appropriate section for the receiver on your trailer.

5.3.1 Trailer with Ball Receiver

A ball receiver connects to a ball that is installed in the bed of the tow vehicle.



We have utilized a ball receiver that is suitable for the size and weight of the trailer. The load rating of the receiver 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.

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

The tow vehicle, 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 is the same size as the receiver.

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

5.3.1.1 Before Coupling Trailer to Tow Vehicle

1. Be sure the size and rating of ball match the size and rating of the receiver. Hitch balls and receivers are marked with their size and rating.



! WARNING

Receiver-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 receiver.

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

2. Wipe the 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.

3. Rock the ball to make sure it is tight to the hitch and visually check that the hitch ball is solid against the hitch frame.

4. Wipe the inside and outside of the receiver clean and inspect it visually for cracks and deformations; feel the inside of the receiver for worn spots and pits.

5. Be sure the receiver is tight to the gooseneck of the trailer. All receiver fasteners must be visibly solid against the trailer frame.

! WARNING

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

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

6. Raise the bottom surface of the receiver to be above the top of the gooseneck ball.

5.3.1.2 Preparing Receiver and Ball

1. Lubricate ball and inside of receiver with a thin layer of automotive grease.

2. Lower tow vehicle tailgate if equipped.

3. Remove safety latch pin and open receiver locking mechanism. In the open position, receiver can drop fully onto hitch ball. See the receiver instructions for details of placing the receiver in the "open" position.

4. Slowly back up tow vehicle so that hitch ball is aligned under receiver.



! WARNING

No one must be under the trailer or receiver during coupling.

Death or serious injury can occur if the trailer drops.

5.3.1.3 Couple Trailer to Tow Vehicle

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

! NOTICE

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

5. If the receiver cannot be secured to the ball, do not tow the trailer. Contact your dealer for assistance.
6. Retract the jack to its fully retracted position.

! 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.

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

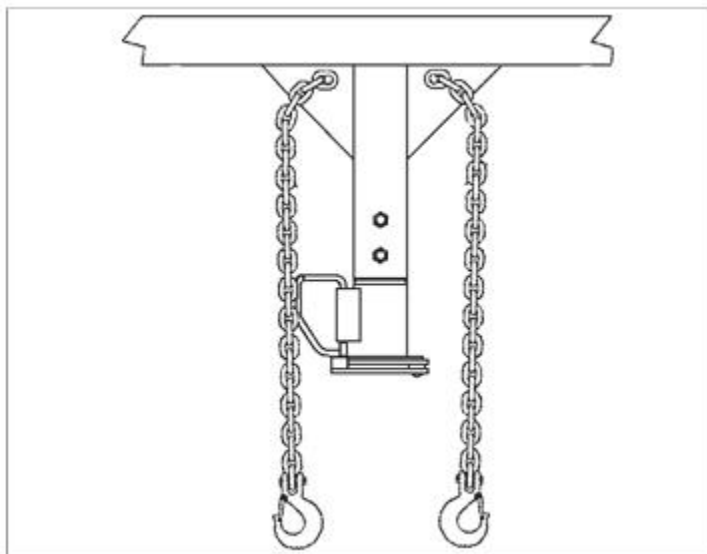
5.3.1.4 Connect Safety Chains

1. Visually inspect the safety chains and hooks for wear or damage. Replace worn or damaged safety chains and hooks before towing.
2. Rig the safety chains so that they attach to the "safety chain receivers" on the tow vehicle. If you are not certain of the hitch provisions for receiving safety chains, contact the



hitch manufacturer or installer. Do NOT attach the safety chains to the gooseneck ball or its support.

3. Rig the safety chains so they have sufficient slack to permit turning, but not too much slack – the safety chains must keep the gooseneck on the tow vehicle bed if the trailer uncouples.



! 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.

5.3.1.5 Connect Electrical Cable

1. Connect the trailer lights to the tow vehicles' electrical system using trailer electrical cable.
2. Check all lights for proper operation. Repair or replace non-working lights before towing trailer.
3. Check electric brakes for proper operation using brake controller mounted in the cab.



! WARNING

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

Before each tow:

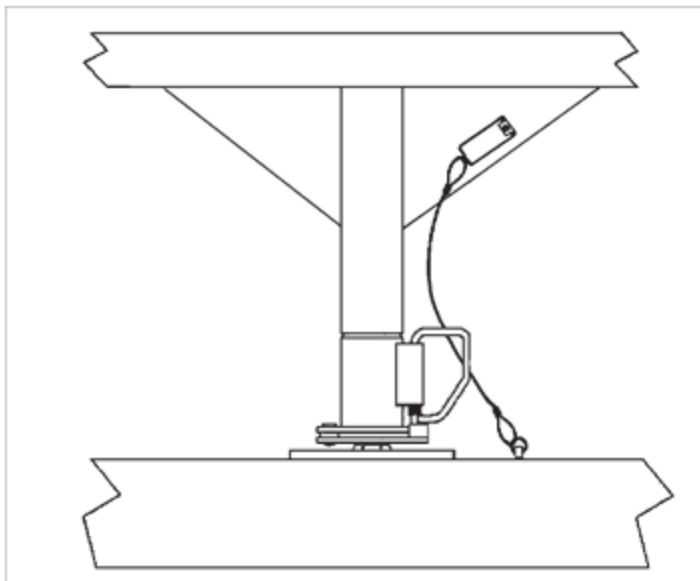
- Check that the electric brakes work by operating the brake controller inside the tow vehicle.
- Check that all lights and turn signals work.

5.3.1.6 Attach Break-a-way Brake Lanyard

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

Connect the lanyard to the tow vehicle so that the hydraulic actuator will engage or the electric brake pull pin will be pulled out before all the slack in the safety chains is taken up. Do not connect the lanyard to a safety chain, gooseneck ball or its support. This would keep the breakaway brake system from operating when it is needed.

Contact the hitch manufacturer or installer if you are not certain of the hitch provisions for the breakaway brake connection.



5.3.1.7 Test Electric Brakes

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer on the road, you must operate



the brake controller while trying to pull the trailer to confirm that the electric brakes operate.

While towing the trailer at less than 5 mph, manually operate the electric brake controller in the tow vehicle. You should feel the operation of the trailer brakes. If the trailer brakes are not functioning, the brake system **MUST** be evaluated to determine the cause of the problem and corrective action **MUST** be taken before the trailer is used. Take the unit to your dealer or a qualified brake specialist.

Use this procedure each time you tow the trailer to check brake system operation.

5.3.1.8 Test Electric Brake-a-way Brakes

The breakaway brake system includes a battery, a switch with a pull pin and lanyard, and a breakaway brake controller. Read and follow the instructions here as well as the instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, contact your dealer for assistance.

Hydraulic tilt trailers may use the hoist battery to provide power to the breakaway brakes. If your trailer is not set up this way, there will be a small breakaway battery mounted near the breakaway switch.

Most trailers are set up to charge the battery from the tow vehicle. If the electrical system on your tow vehicle does not provide power to the battery, you must periodically charge the battery with a commercial battery charger to keep the battery charged.

! CAUTION

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

Check battery charge level before towing.

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

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

Immediately replace the pull pin. The breakaway brake battery discharges rapidly when the pull pin is removed.



! WARNING

An ineffective breakaway brake system can result in a runaway trailer, leading to death or serious injury if the receiver 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, pintle, hitch, or support.

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

! WARNING

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

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

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

Replace the brake-a-way battery according to the intervals specified by battery manufacturer.

5.3.1.9 Uncouple Trailer with Ball Receiver

Follow these steps to uncouple trailer from the tow vehicle:

1. Park the 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 receiver and open it.
7. Before extending jack, make certain the ground surface below the jack pad will support the tongue load.



! CAUTION

Drop leg jacks may be spring loaded. position when released.

If so, they will rapidly return to the raise

Keep clear when releasing drop legs.

8. Lower jack drop leg if equipped.

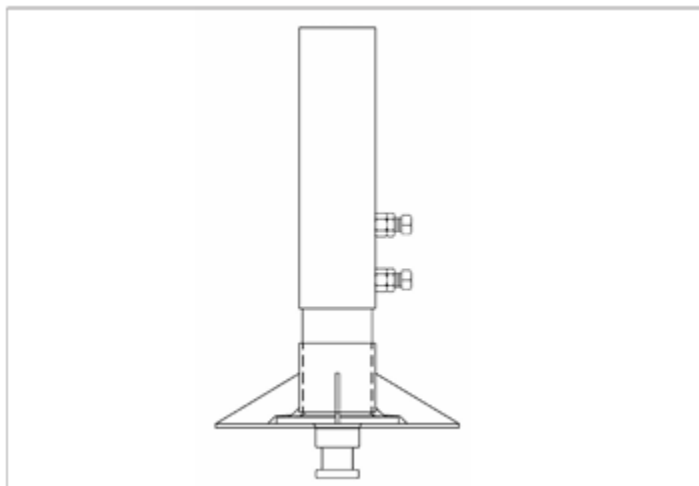
9. Rotate jack handle to extend the jack and transfer the weight of the trailer gooseneck to the jack.

10. Raise the trailer receiver above the tow vehicle hitch.

11. Drive tow vehicle forward.

5.3.2 Trailer with Kingpin

A king pin connects to a fifth wheel that is installed in the bed of the tow vehicle.



We have utilized a king pin that is suitable for the size and weight of the trailer.

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

Be sure of the size and rating of the fifth wheel and kingpin match.

5.3.2.1 Before Coupling Trailer to Tow Vehicle

1. Be sure of the size and rating of the fifth wheel and kingpin match.



! WARNING

Receiver-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 receiver.

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

2. Check the kingpin and kingpin plate for wear, bending, cracks or corrosion before coupling. Replace worn, bent, cracked or corroded kingpin before coupling the trailer.

! WARNING

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

Before coupling trailer, inspect the king pin for wear, corrosion and cracks.

Replace worn or damaged king pin.

3. Wipe the kingpin clean and inspect it visually and by feel for flat spots, cracks and pits. Check the condition of the fifth wheel mounting in the bed of the tow vehicle.
4. Be sure the fifth wheel mechanism operates freely.
5. Lubricate the fifth wheel plate surface with a light coat of Lithium-based, waterproof grease.
6. Be sure the fifth wheel and kingpin fasteners are tight and any welds are solid.

! WARNING

A loose fifth wheel or king pin can result in uncoupling, leading to death or serious injury.

Make sure the fifth wheel and king pin are tight before coupling the trailer.

7. Raise the bottom surface of the king pin plate to be slightly above the top of the fifth wheel.

5.3.2.2 Preparing King Pin and Fifth Wheel

1. Lubricate king pin and fifth wheel with grease.
2. Lower tow vehicle tailgate if equipped.



! WARNING

No one must be under the trailer or king pin during coupling.

Death or serious injury can occur if the trailer drops.

5.3.2.3 Couple Trailer to Tow Vehicle

1. Back tow vehicle up close to the trailer, centering the kingpin in the slot of the fifth wheel. Stop before engaging the coupling.

! WARNING

No one must be under the trailer or king pin during coupling.

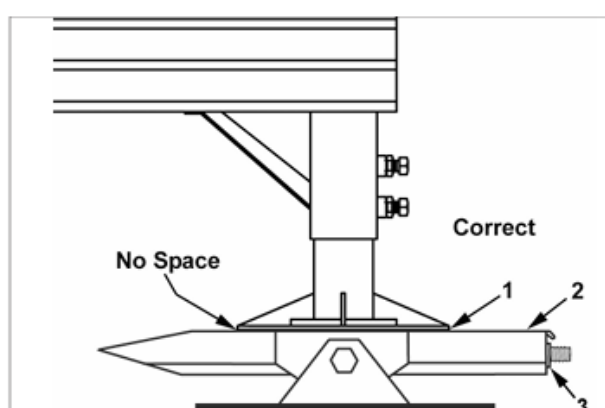
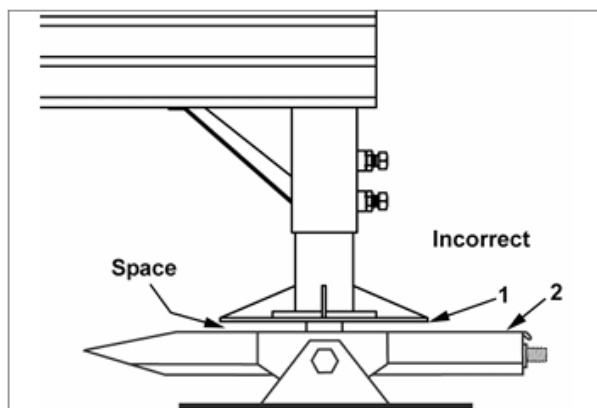
Death or serious injury can occur if the trailer drops.

2. Adjust height of the trailer, using the jack, so that the king pin plate just touches the fifth wheel plate.

3. Slowly back up tow vehicle, keeping the kingpin centered in the slot of the fifth wheel. Continue backing up until the fifth wheel locks firmly on the kingpin.

4. Attempt to pull forward as an initial test of the closing of the fifth wheel locks.

5. Visually check to confirm that the fifth wheel locks are properly locked onto the kingpin.



The king pin plate (1) must be in contact with the fifth wheel (2) with no space.

The adjustment nut (3) must be seated against the fifth wheel

! WARNING

An improperly coupled fifth wheel can come loose, resulting in death or serious injury.
Do not tow the trailer until all the visual checks are met.

5. If the king pin cannot be secured to the fifth wheel, do not tow the trailer. Contact your dealer for assistance.
6. Retract the jack to its fully retracted position.

! 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.

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

5.3.2.4 Connect Electrical Cable

1. Connect the trailer lights to the tow vehicles' electrical system using trailer electrical cable.
2. Check all lights for proper operation. Repair or replace non-working lights before towing trailer.
3. Check electric brakes for proper operation using brake controller mounted in the cab.

! WARNING

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

Before each tow:

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

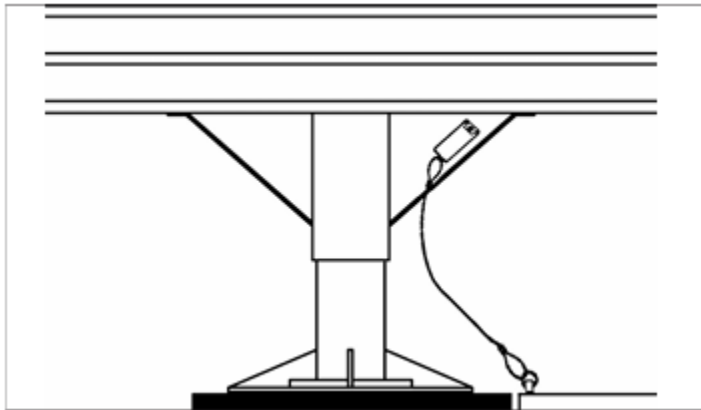


5.3.2.5 Attach Brake-a-way Brake Lanyard

If the king pin or fifth wheel fails, a properly connected and working breakaway brake system will apply the trailer brakes.

Connect the lanyard to the tow vehicle. Do not connect the lanyard to king pin or its support. This would keep the breakaway brake system from operating when it is needed.

Contact the hitch manufacturer or installer if you are not certain of the hitch provisions for the breakaway brake connection.



5.3.2.6 Test Electrical Brakes

If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes. Before towing the trailer on the road, you must operate the brake controller while trying to pull the trailer to confirm that the electric brakes operate.

While towing the trailer at less than 5 mph, manually operate the electric brake controller in the tow vehicle. You should feel the operation of the trailer brakes. If the trailer brakes are not functioning, the brake system **MUST** be evaluated to determine the cause of the problem and corrective action **MUST** be taken before the trailer is used. Take the unit to your dealer or a qualified brake specialist.

Use this procedure each time you tow the trailer to check brake system operation.

5.3.2.7 Test Electrical Brake-a-way

The breakaway brake system includes a battery, a switch with a pull pin and lanyard, and a breakaway brake controller. Read and follow the instructions here as well as the instructions that have been prepared by the breakaway brake manufacturer. If you do not have these instructions, contact your dealer for assistance.

Normally, dump trailers use the hoist battery to provide power to the breakaway brakes. If your trailer is not set up this way, there will be a small breakaway battery mounted near the breakaway switch.



Most trailers are set up to charge the battery from the tow vehicle. If the electrical system on your tow vehicle does not provide power to the battery, you must periodically charge the battery with a commercial battery charger to keep the battery charged.

! CAUTION

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

Check battery charge level before towing.

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

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

Immediately replace the pull pin. The breakaway brake battery discharges rapidly when the pull pin is removed.

! WARNING

An ineffective breakaway brake system can result in a runaway trailer, leading to death or serious injury if the king pin 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 fifth wheel or its support.

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

5.3.2.8 Uncouple Trailer with Kingpin

Follow these steps to uncouple trailer from the tow vehicle:

1. Park the 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. Before extending jack, make certain the ground surface below the jack pad will support the tongue load.

! CAUTION

Drop leg jacks may be spring loaded.

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

Keep clear when releasing drop legs.

6. Lower jack drop leg if equipped.

7. Rotate jack handle to extend the jack to transfer some of the weight of the trailer to the jack.

8. Open fifth wheel lock by pulling release handle.

9. Slowly drive tow vehicle forward.

10. Raise tow vehicle tail gate if equipped.

5.4 Tongue Weight

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

If there is too much tongue weight, the tow vehicle is prone to jack-knife. The front wheels of the tow vehicle can be too lightly loaded and cause loss of steering control.

In addition to tow vehicle control, tongue weight is necessary to insure that the trailer axle(s) do not exceed their Gross Axle Weight Rating (GAWR). The rule of thumb is that 20-25% percentage of total weight of the trailer plus its cargo (Gross Trailer Weight, or "GTW") that should be on the tongue of the trailer.

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.

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



For questions regarding the actual percent of tongue weight for the trailer, check with the manufacturer for specifics.

! WARNING

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

Make certain that 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.

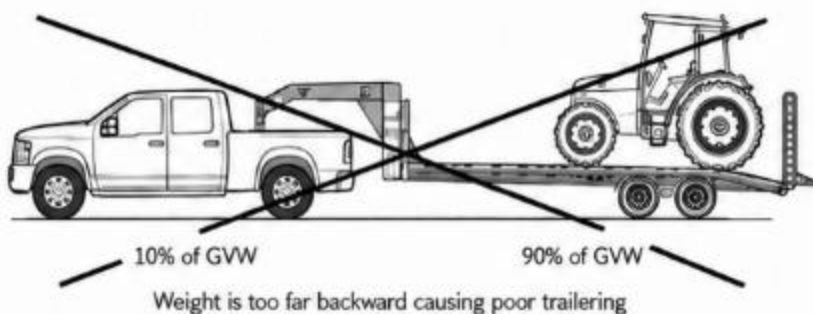
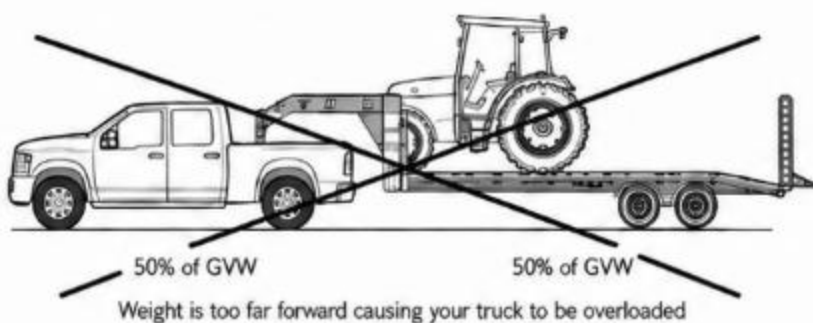
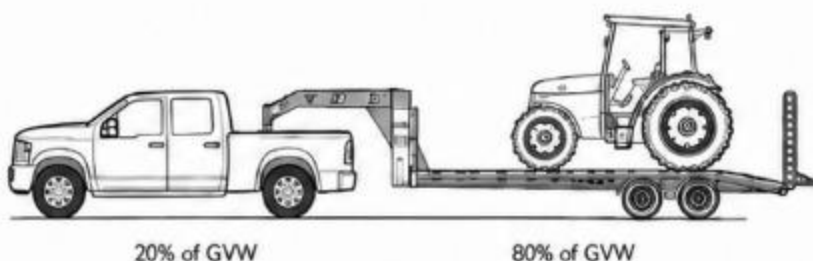
A flowable load must be evenly distributed throughout the body.



Weight Distribution

Proper weight distribution is important.

Diagrams below show different ways that cargo could be loaded and the weight distribution on the hitch and axles of the trailers.



Gooseneck hitch weight should be approximately 20% of the gross vehicle weight rating (GVWR) of the trailer.

5.4.1 Check Tongue Weight

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

Take the trailer to a truck stop or grain elevator where there is a “certified” scale. Place the tow vehicle only onto the scale and get the weight. This weight must be less than your tow vehicle’s GVWR.

Pull the trailer onto the scale and uncouple it from the tow vehicle, leaving just the trailer on the scale. Get a ticket which lists the total trailer weight. Re-connect the trailer to your tow



vehicle and the drive the tow vehicle wheels off the scale, just leaving the trailer axles on the scale. Get a “ticket”, which lists the trailer’s axle weight. Simply subtract the axle weight from the total weight to determine the hitch weight.

While you are at the scale, you should weigh the entire combination vehicle. This result should be less than the Gross Combined Weight Rating (GCWR) for your towing vehicle. Some scales allow you to get individual axle weights also. If this is possible, get the tow vehicles front and rear axle weights to make sure they are in the same proportion as the tow vehicle alone, and that the rear axle is not overloaded.

5.5 Adjust Gooseneck Height

The height of the receiver or king pin on the trailer must be adjusted so that the trailer, when loaded to rated capacity, is level while connected to the tow vehicle. A level trailer allows equal weight distribution on the axles.

Your dealer or a trailer service center can perform this adjustment, or you can use the following steps to adjust the hitch height yourself.

WARNING

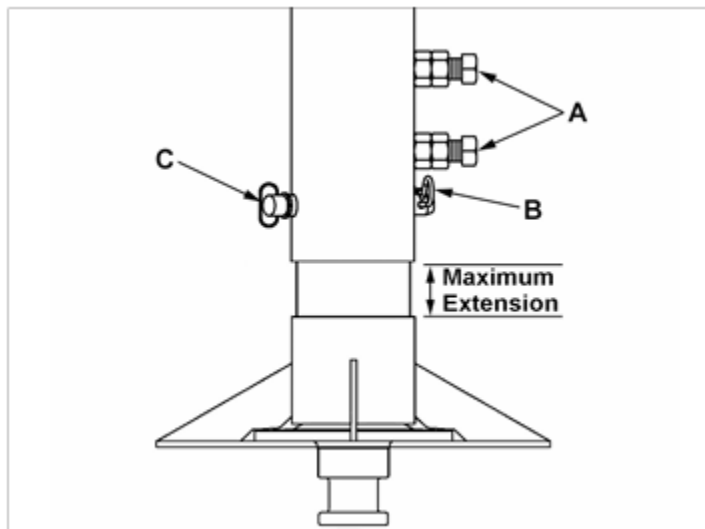
Improper receiver or king pin height adjustment can result in overloaded tires, blowout and loss of control, leading to death or serious injury.

Adjust the receiver or king pin 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 the tow vehicle and trailer on a firm level surface.
3. Stand away from the trailer and visually verify if the trailer is level front-to-rear. If the front of the trailer is higher than the rear, the hitch must be raised. If the front of the trailer is lower than the rear, the 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 the receiver or king pin as needed up to the maximum specified by the manufacturer.
8. If equipped, fully insert load bearing pin (B) through one set of holes in coupler and outer tube. NEVER use the set screw or any other device as a replacement for the load bearing pin (B).
9. If equipped, install retaining pin (C) on load bearing pin (B).



10. Tighten setscrews (A) to the torque specified by the manufacturer.
11. Tighten jam nuts to the torque specified by the manufacturer.
12. Check tightness after 50 miles of towing.

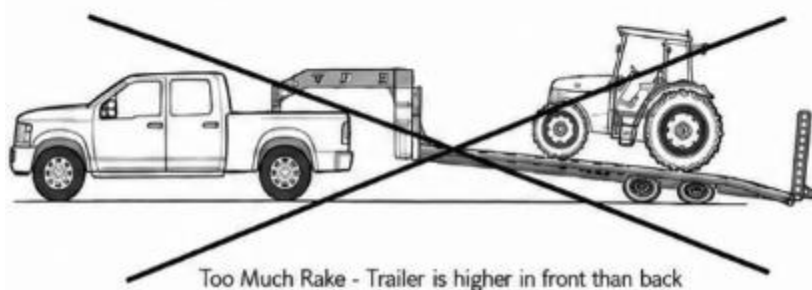
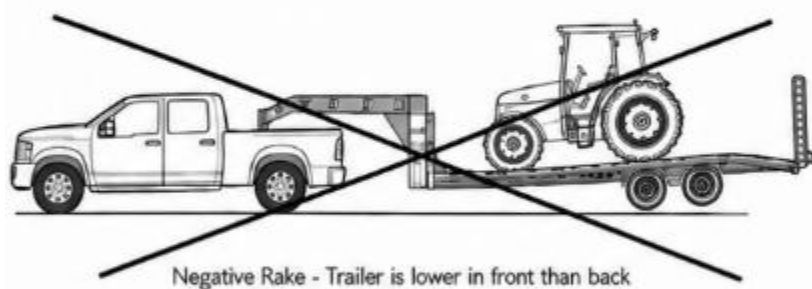
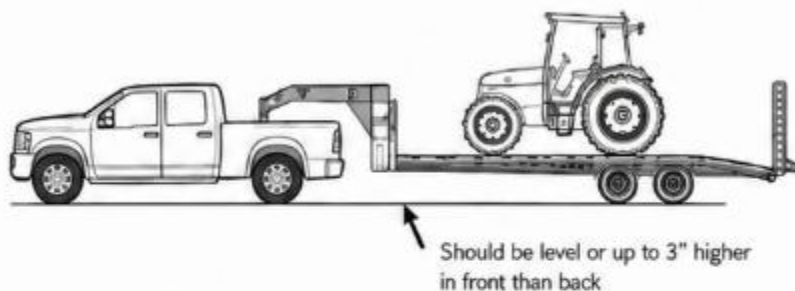


13. Couple the trailer to the tow vehicle and verify that the trailer is level front to rear. Adjust if necessary.

14. Unload trailer. See Loading And Unloading.

Hitch Height

Making sure that the rake of your trailer is correct is extremely important. This will affect the way your trailer tows, how your tires wear and, of extreme importance, how your brakes perform.



6. Loading and Unloading

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

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



to determine that you have loaded the trailer within its rating, you must consider the distribution of weight, as well as the total weight of the trailer and its contents. The trailer axles carry most of the total weight of the trailer and its contents (Gross Vehicle Weight, or "GVW"). The remainder of the total weight is carried by the tow vehicle hitch.

It is essential for safe towing that the trailer tongue and tow vehicle hitch carry the proper amount of the loaded trailer weight, otherwise the trailer can develop an undesirable sway at towing speeds, or the rear of the towing vehicle can be overloaded. Read the "tongue Weight" information in Section 4.

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

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

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 on your trailer.

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

! WARNING

Do not transport people on your trailer.

Besides putting their lives at risk, the transport of people on a trailer is illegal.

6.1 Loading and Unloading a Trailer

6.1.1 Preparing Trailer for Loading

1. Inspect the floor of the trailer.
2. Inspect the tie down rings and track system for damage, looseness or signs of bending before loading the trailer.



! WARNING

Damaged or loose tie down rings or track 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 tie downs and track before loading cargo. Do not use damaged or loose tie downs or track to secure cargo.

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

5.1.2 Loading A Rigid Deck Trailer

1. Couple the trailer to the tow vehicle.

! WARNING

Trailer must be coupled to tow vehicle before loading trailer.

2. Lower rear stabilizers (if equipped) or place blocking under rear of trailer so the weight of the cargo does not raise the front of the trailer during loading.

! CAUTION

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

3. Remove ramps from storage position and secure to rear of trailer. Adjust ramp position to align with equipment tires or tracks.

! 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.



! NOTICE

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

Do not overload ramps.

4. Load the cargo onto trailer with approximately 60% of the cargo in the front half of the trailer.

5. 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.

6. Remove ramps and place them in storage position.

7. Secure ramps to trailer.

8. Raise rear stabilizers (if equipped) or remove blocking under rear of trailer.

6.1.3 Loading A Tilt Deck Trailer

A tilt deck trailer may be equipped with a manual or a hydraulic tilt deck.

6.1.3.1 Manual Tilt Trailer

1. Couple the trailer to the tow vehicle.

! WARNING

Trailer must be coupled to tow vehicle before loading trailer.

2. Release deck latch pin and open hydraulic lock to pivot trailer deck for loading.

! WARNING

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



! WARNING

Loading a pivoting-deck trailer before retracting the deck catch pin can crack the catch pin, which can cause loss of cargo or loss of control of the trailer. Death or serious injury may result.

Before loading the trailer, retract the deck catch pin.

If the deck catch pin becomes bent, do not straighten it. Replace the deck catch pin before towing the load.

3. Load the cargo on trailer with approximately 60% of the cargo in the front half of the trailer. Deck will pivot down into the driving position as the cargo is moved forward on the deck.

4. Extend the deck catch pin into the deck to lock the deck into the driving position. Verify the catch engages the hole in the pivoting deck.

! WARNING

An unlocked pivoting deck can result in loss of cargo or loss of control of the trailer, which can result in death or serious injury.

Before towing the trailer:

- Lock the pivoting deck in the driving position.
- Verify that the catch engages the hole in the pivoting deck.

5. 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.

! WARNING

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

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

1. Couple the trailer to the tow vehicle.

! WARNING

Trailer must be coupled to tow vehicle before loading trailer.



2. Read and understand the hoist operating procedure before operating the tilt deck.
3. Locate the tilt deck controller. Position yourself in a safe location clear of the tilt deck.
4. Press and hold button to raise the tilt deck. Release the button when the rear of the tilt deck touches the ground.
5. Load the cargo on trailer with approximately 60% of the cargo in the front half of the trailer.
6. Secure cargo to prevent movement.
7. Press and hold button to lower the tilt deck. Release the button when the tilt deck is in the driving position.
8. 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.
9. Stow controller.

! WARNING

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

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

6.2 Unload Trailer

6.2.1 Unload Manual Tilt 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. Release deck latch pin and open hydraulic lock to pivot trailer deck for unloading.



! WARNING

Unloading a pivoting-deck trailer before retracting the deck catch pin can crack the catch pin, which can cause loss of cargo or loss of control of the trailer. Death or serious injury may result.

Before unloading the trailer, retract the deck catch pin.

If the deck catch pin becomes bent, do not straighten it. Replace the deck catch pin before towing the load.

6. Carefully move cargo toward rear of trailer. Deck will pivot down into the unload position as the cargo is moved rearward on the deck.

7. Pivot deck back to the driving position and extend the deck catch pin to lock the deck. Verify the catch engages the hole in the pivoting deck.

! WARNING

An unlocked pivoting deck can result in loss of cargo or loss of control of the trailer, which can result in death or serious injury.

Before towing the trailer:

- Lock the pivoting deck in the driving position.
- Verify that the catch engages the hole in the pivoting deck.

6.2.2 Unload Hydraulic Tilt 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. Read and understand the hoist operating procedure before operating the tilt deck.

6. Locate the tilt deck controller. Position yourself in a safe location clear of the tilt deck.



7. Press and hold button to raise the tilt deck. Release the button when the rear of the tilt deck touches the ground.
8. Unload the cargo from trailer.
9. Press and hold button to lower the tilt deck. Release the button when the tilt deck is in the driving position.
10. Stow controller.

6.3 Hydraulic Components

Do not alter or substitute hydraulic components on the trailer. The hydraulic system is designed with each component being compatible with the safe and reliable operation of the hydraulic system. Under no circumstances should you alter the hydraulic pressure or flow rate in the hydraulic system.

DANGER

Crushing hazard.

An altered or component substituted hydraulic system may malfunction, resulting in the tilt deck falling without warning.

NEVER alter or substitute any hydraulic system component.

Always have the hydraulic system repaired or maintained by a qualified technician.

6.4 Securing Cargo

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.

Refer to www.fmcsa.dot.gov for regulations regarding cargo securement rules.

6.5 Pre-tow Checklist

Before towing, double-check all these items:

- Tires, wheels, and nuts. See “Breaking In A New Trailer” section of this manual.
- Tire Pressure. Inflate tires on trailer and tow vehicle to the pressure stated on the Certification / VIN label.



- Coupler secured and locked. See “Coupling to tow Vehicle” section of this manual.
- Safety chains properly rigged to tow vehicle, not hitch or ball. See “Coupling to tow Vehicle” section of this manual.
- Test Tail, Stop, and Turn Lights.
- Test trailer brakes.
- Safety breakaway lanyard fastened to tow vehicle, not to safety chains. See “Coupling to tow Vehicle” section of this manual.
- Cargo properly loaded, balanced and tied down. See the appropriate “Loading and Unloading” section of this manual.
- tongue weight and weight distribution set-up.
- Ramps secured for travel.
- Fire extinguisher.
- Flares and reflectors.

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.

7. Breaking In A New Trailer

7.1 Retighten Lugs At First 10, 25 & 50 Miles

Wheel fasteners can shift and settle after initial assembly. Check and retighten the wheel lug nuts or bolts after the first 10, 25, and 50 miles of towing, and thereafter at the intervals specified in the Inspection, Service, and Maintenance section of this manual.

Tighten wheel fasteners to the specified torque, using the specified tightening sequence and a properly calibrated torque wrench. Improperly tightened wheel fasteners can loosen or damage the wheel, hub, studs, or other components, which may result in wheel separation and a crash causing death or serious injury.

Warranty coverage may not apply to damage or failures caused by improper wheel-fastener tightening, installation, or maintenance. Refer to the axle manufacturer's warranty and the 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 the wheel at 10, 25 and 50 miles.

7.2 Adjust Brake At First 200 Miles

Brake shoes and drums experience rapid initial wear. The brakes must be adjusted after the first 200 miles of use, and each 3,000 miles thereafter. Some axles are fitted with a mechanism that will automatically adjust the brake shoes.

Read your axle and brake manual to see if your brakes adjust automatically. If you do not have the axle and brake manual, contact your dealer for assistance.

If your trailer is not fitted with automatically adjusting brakes, the brakes will need to be manually adjusted. See section 9 for instructions.

7.3 Synchronizing Brake Systems

Trailer brakes are designed to work in synchronization with the brakes on the tow vehicle. When the tow vehicle and trailer braking systems are synchronized, both braking systems contribute to slowing, and the tongue of the trailer will neither dive nor rise sharply.

! WARNING

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

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

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

8. Accessories

This section provides some basic information for the safe operation of accessories.

You must read and follow these instructions before using the accessory. If you are uncertain whether you have all the instructions, contact your dealer before operating the accessory.



8.1 Accessory Battery

Your trailer may be equipped with an auxiliary battery used to power electrical accessories such as hydraulic landing legs, electric jacks, winches, hydraulic power units, interior or work lights, and other optional equipment.

The accessory battery may be charged by the tow vehicle, an onboard charger, a battery maintainer, or another charging system installed on the trailer. Charging configuration varies by trailer model and installed options.

Maintain the battery in a fully charged condition. A discharged battery may not provide sufficient power to operate trailer accessories and may be damaged by freezing temperatures during storage.

Inspect the battery, cables, terminals, mounting hardware, and battery box regularly. Keep terminals clean and tight, and replace damaged, corroded, loose, or frayed cables before operating the trailer.

When the trailer is stored for an extended period, follow the battery manufacturer's recommendations for charging and maintenance. Disconnect or maintain the battery as required to prevent excessive discharge.

WARNING

Batteries can produce explosive gases and can deliver enough electrical current to cause severe burns, fire, or component damage.

- Keep sparks, flames, cigarettes, and other ignition sources away from the battery.
- Do not place tools or other conductive objects across the battery terminals.
- Verify that battery cables are connected to the correct terminals.
- Disconnect battery power before servicing trailer electrical equipment unless power is required for the specific service procedure.
- Wear appropriate eye and hand protection when servicing or handling a battery.
- Replace damaged, leaking, swollen, or excessively corroded batteries.
- Secure the battery properly before towing.

If the battery is installed in a box equipped with a lid support or prop rod, make sure the support is secured in its retaining clip when not in use. Do not allow the support rod, tools, or other metal objects to contact the battery terminals.

Battery Isolator

All Auxiliary batteries should be installed with an isolator to not allow back feed to the truck

Battery Charging



Use only a charger or charging system compatible with the type and voltage of battery installed on the trailer. Follow the battery and charger manufacturers' instructions.

Do not operate trailer accessories when battery voltage is too low to operate the equipment normally. Slow, intermittent, or unusual accessory operation may indicate a discharged battery or an electrical-system problem.

 NOTICE

Battery type, capacity, charging method, and location may vary by trailer model and installed equipment. Refer to the battery and charger manufacturer's instructions or contact M.H. Eby if service information is required.

9. Inspection, Service and Maintenance

9.1 Inspection, Service & Maintenance Summary Charts

You must inspect, maintain and service your trailer regularly to ensure safe and reliable operation. If you cannot

or are unsure how to perform the items listed here, have your dealer do them. Note: In addition to this manual,

also check the relevant component manufacturer's manual.



Inspection And Service Before Each Tow		
Item	Inspection/Service	Manual Section Reference
Breakaway Brakes • Electric • Hydraulic	Check operation. Check operation.	Section 4. Section 4.
Breakaway Battery	Fully charged, connections clean.	Section 4 and 9.
Brakes • Electric • Surge	Check operation. Check operation. Check master cylinder level.	Section 4 and 9.
Shoes And Drums	Adjust	Section 9.
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. 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. 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 for tightness. 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 And Service Every Month		
Item	Inspection / Service	Manual Section Reference
Lubrication	Lubricate tilt deck pivot points (if equipped). Lubricate hydraulic cylinder ends (if equipped).	Section 9. Section 9.



Inspection and Service Every 6 Months or 6,000 Miles		
Item	Inspection/Service	Manual Section Reference
Brakes, electric		
• Magnet	Check wear and current draw.	Section 9.
• Controller (in tow vehicle)	Check power output (amperage) and modulation.	Section 9. See Controller Mfr's Manual
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.
Brakes		
• Electric	Check Operation.	Section 4.
• Surge	Check Operation. Check Master Cylinder Level.	
Brake Shoes And Drums	Adjust	Section 7 and 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.



Inspection And Service Every Year or 12,000 Miles		
Item	Inspection/Service	Manual Section Reference
Brakes, all types • Shoes and Drums	Check for scoring and wear. Replace per manufacturer's specifications.	Section 9. See Brake Mfr's Manual
Jack, Drop-leg (if equipped)	Grease gears at top.	See Jack Mfr's Manual
Structure • Frame Members	Inspect all frame members, bolts & rivets. Repair or replace damaged, worn or broken parts.	Section 9.
• Welds	Inspect all welds. Repair as needed.	Section 9.
Wheels • Wheel Bearings	Disassemble / inspect / assemble and repack. Replace promptly if immersed in water.	Section 9 & See Axle Mfr's Manual
• Rims	Inspect for cracks & dents. Replace as needed.	
Structure • Axle Attachment Bolts	Check BY DEALER	Section 9.

For Dexter Axle Maintenance Procedures visit:

<https://www.dexteraxle.com/resources/manuals>

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 to clear wiring, brake lines, and suspension parts (springs, torsion bars, etc.). Place jacks and jack stand 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 secure jack stands.



! WARNING

Crushing hazard.

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

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

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 and repair all damaged parts at least once a year.

Replacing Factory-Installed Huck Fasteners:

Some trailer components are assembled using factory-installed Huck® fasteners. If a Huck fastener is damaged or must be removed for service, it may be replaced with an equivalent Huck fastener installed using the proper equipment.

When Huck installation equipment is not available, the Huck fasteners used by M.H. Eby may be replaced with a conventional bolt and locknut assembly of the same nominal diameter, provided the mounting holes and connected components are not damaged.

A Grade 5 bolt and compatible locknut provide the minimum required strength for replacing the applicable factory-installed Huck fastener. However, M.H. Eby recommends using a Grade 8 flanged bolt and compatible Grade 8 flanged locknut. Grade 8 flanged hardware provides additional strength margin, distributes the clamping load over a larger area, and is typically available with improved corrosion-resistant coatings.

The replacement bolt must:

- Be the same nominal diameter as the original Huck fastener.
- Fit the existing hole without enlarging or modifying it.



- Have sufficient length to provide full thread engagement through the locknut.
- Be installed with compatible hardware of the same or greater strength grade.
- Be tightened to the M.H. Eby-approved torque for the fastener size and joint application.

Do not use hardware below SAE Grade 5. Do not enlarge the mounting hole, reduce the fastener diameter, or substitute unapproved hardware.

The following values are suggested starting torques for UNC coarse-thread, plain, dry SAE J429 bolts, tightened to approximately 75% of the bolt proof load.

Bolt Size	Thread	Grade 5 Torque	Grade 8 Torque
1/4in	¼-20	8 lb-ft (96 lb-in)	12 lb-ft (144 lb-in)
5/16in	5/16-18	17 lb-ft	25 lb-ft
3/8in	3/8-16	31 lb-ft	44 lb-ft
7/16in	7/16-14	49 lb-ft	70 lb-ft
1/2in	½-13	75 lb-ft	107 lb-ft
9/16in	9/16-12	109 lb-ft	154 lb-ft
5/8in	5/8-11	150 lb-ft	212 lb-ft

WARNING

The torque values in this chart apply only to clean, dry, undamaged UNC fasteners installed without oil, grease, anti-seize compound, thread-locking compound, or other lubricant. Lubrication or friction-reducing coatings can substantially increase bolt tension at the same applied torque and may cause fastener failure, thread damage, or deformation of aluminum components.

Do not use this chart for lubricated fasteners, fine-thread fasteners, stainless-steel fasteners, damaged or reused locknuts, or hardware with an unapproved coating. Contact M.H. Eby for the correct torque when the fastener condition differs from the conditions stated above.

Over-torquing can stretch or break the fastener, damage threads, crush or deform connected components, and reduce the strength of the joint. Under-torquing can allow the fastener to loosen, causing joint movement, fatigue, component separation, or structural failure.

Tighten all fasteners to the specified torque using a calibrated torque wrench. Do not exceed or fall below the applicable torque requirement.



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 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 and repair all damaged parts at least once a year.

9.2.2 Trailer Brakes - Electric

9.2.2.1 Brake Discs, Shoes and Drums

Properly functioning brake shoes and drums are essential to ensure safety. You must have your dealer inspect these components at least once per year, or every 12,000 miles. Brake adjustment is not covered under the axle warranty.

The brake shoes must be adjusted after the first 200 miles of use, and each 3,000 miles thereafter. Most axles are fitted with a brake mechanism that will automatically adjust the brake shoes when the trailer is "hard braked" from a rearward direction. Trailer disc brakes are self-adjusting and do not need to be periodically adjusted. Using pads or shoes without enough brake lining material can result in brake damage, create excessive heat and potentially cause the loss of braking capacity. Read your axle and brake manual to see how to adjust your brakes. If you do not have this manual, contact your dealer for assistance.

9.2.2.2 Manually Adjusting Brake Shoes

Some braking systems are not automatically adjusted. These brakes require manual adjustment. The following steps apply to adjust most manually adjustable brakes.

Read your axle and brake manual to see how to adjust your brakes. If you do not have this manual, contact your dealer for assistance.



1. Jack up the trailer and secure it on adequate capacity jack stands.
2. Be sure the wheel and brake drum rotate freely.
3. Remove the adjusting-hole cover from the adjusting slot on the bottom of the brake backing plate.
4. with a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn. Note: Your trailer may be equipped with drop spindle axles. See axle manual for your axle type. You will need a modified adjusting tool for adjusting the brakes in these axles.
5. Rotate the starwheel in the opposite direction until the wheel turns freely with a slight drag.
6. Replace the adjusting-hole cover.
7. Repeat the above procedure on all brakes.
8. Lower the trailer to the ground.

9.2.2.3 Electric Brakes

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

Breakaway Battery - This battery supplies the power to operate the trailer brakes if the trailer uncouples from the tow vehicle. Be sure to check, maintain and replace the battery according to the battery manufacturer's instructions. Your trailer may use the hydraulic system battery to operate the breakaway brakes.

CAUTION

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

Check battery charge level before towing.

Breakaway Switch - This switch engages the electric brakes if the trailer uncouples from the tow vehicle. to check for proper functioning of the switch, battery and brakes, you must pull the pin from the switch and confirm that the brakes apply to each wheel. You can do this by trying to pull the trailer with the tow vehicle, after pulling the pin. The trailer brakes may not lock, but you will notice that a greater force is needed to pull the trailer.



! WARNING

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

Check emergency breakaway brake system before each tow.

9.2.2.4 tow Vehicle Operated Electric Brakes

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

9.2.2.5 Electric Brake Magnets

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

9.2.3 Trailer Brakes - Surge (If equipped)

9.2.3.1 Surge Brake Master Cylinder

Check fluid level prior to using the trailer. The master cylinder is normally located on the tongue of the trailer.

The fluid level must be maintained at full mark on reservoir.

Check with your dealer for the type of brake fluid used
in the brake system.

9.2.3.2 Hydraulic Surge Brake

Before each tow, perform the following steps:

1. Check that the brake master cylinder level as instructed above. Check for leaks and repair as required.
2. Examine the actuator for wear, bent parts, corroded/seized parts, or other damage. Have the affected components replaced with genuine service parts.
3. Check to determine that the actuator mounting bolts are tightened to the manufacturer’s specification.
4. Test the actuator and brake function as described in the Coupling to tow Vehicle section of this manual. Actuator traveling over one inch indicates that the brakes need adjustment (or that the actuator has been structurally damaged). Actuator travel is the distance the coupler case assembly moves to the outer case during braking. Adjust the brakes following



the instructions given in the brake installation manual. Failure to adjust brakes will result in loss of braking.

5. Before storage or after extended use, apply motor oil to the coupler components and the internal rollers to keep them moving freely and to prevent corrosion.

6. See the surge brake manufacturer's manual for other inspection and maintenance activities. If you do not have this manual, contact your dealer for assistance.

9.2.3.3 Master Cylinder Bleeding

Remove the master cylinder cap and fill the reservoir to three quarters full of DOT-3 or DOT 4 brake fluid. DO NOT allow brake fluid to contact painted surfaces since it will damage the finish. Wipe up any spills immediately and wash the area with water.

Note that DOT-5 cannot be mixed with DOT-3 or DOT-4 Brake fluid

Bleed the brake system manually or with a pressure bleeder. Pressure bleeding equipment simplifies the process and is available at most automotive supply stores. Use the instructions provided with the pressure bleeder. If you choose to bleed the system, an assistant is required. Use the following steps to manually bleed the brake system:

1. Disconnect the trailer from the tow vehicle and jack the trailer's tongue until it is horizontal. Make sure that the wheels are blocked so that the trailer will not roll away.
2. Fill the master cylinder with correct fluid.
3. Install a bleeder hose on the bleeder screw of the farthest wheel cylinder from the actuator. If the trailer has multiple axles, bleed the rear axle first. Submerge the other end of the hose in a glass container of brake fluid, so that air bubbles can be observed.
4. Open the bleeder screw and have an assistant stroke (but not release) the actuator. Brake fluid and/or air bubbles will flow into the jar. Close the bleeder screw. The helper can then allow the actuator to return to its rest position.
5. Repeat the process until no more bubbles are released with the stroke. Air trapped in the brake lines will greatly reduce your braking efficiency. Be sure to close the bleeder screw securely when the cylinder is fully bled. Repeat the bleeding operation at each wheel cylinder. During the bleeding process, replenish the master cylinder reservoir with fresh brake fluid so that the level does not fall below half full. This will ensure that no air is drawn into the system.
6. After all brakes have been bled, refill the master cylinder before operating. Be sure to install the master cylinder filler cap.



! WARNING

Use only fresh brake fluid from a sealed container. DO NOT reuse fluid. After filling and bleeding, refill the actuator. Failure to maintain an adequate fluid level may cause brake failure.

9.2.4 Trailer Connection to tow Vehicle

9.2.4.1 Coupler and Ball

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

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

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

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

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

Demco EZ Latch couplers exceed all required SAE J684 safety standards without the use of a safety pin. The EZ Latch system is a maintenance free system. No grease or adjustments needed. For more info visit:

<https://www.demco-products.com/trailercomponents/couplers>

9.2.4.2 Ring and Pintle

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

See the pintle manufacturer's manual for other inspection and maintenance activities. If you do not have this manual, contact your dealer for assistance.

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



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

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

9.2.5 Landing Leg Or Jack

If grease fitting is present, use a grease gun to lubricate the jack mechanism. Grease the gears in the top of hand-cranked jacks once a year, by removing the top of the jack and pumping or hand packing grease into the gears.

9.2.6 Lights and Signals

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

WARNING

to avoid risk of collisions, all lights must work.

9.2.7 Wheel Rims

If the trailer has been struck, or impacted, on or near the wheels, or if the trailer has struck a curb, inspect the rims for damage. Replace any damaged wheel. Inspect the wheels for damage every year, even if no obvious impact has occurred.

9.2.8 Tires

Before each tow, check the tire pressure to make sure it is at the level indicated on the tire sidewall or VIN label. Tire pressure must be checked while the tire is cold. Do not check tire pressure immediately after towing the trailer. Allow at least three hours for the tires to cool, if the trailer has been towed for as much as one mile. Tires can lose air over a period.

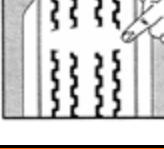
Replace the tire before towing the trailer if the tire treads have less than 2/32-inch depth or the telltale bands are visible.

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

If you are storing your trailer for an extended period, make sure the tires are inflated to the maximum rated pressure indicated on the sidewall or VIN label and that you store them in a cool, dry place such as a garage.

Use tire covers to protect the tires from the harsh effects of 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

WARNING

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

9.2.9 Wheel Bearings

A loose, worn or damaged wheel bearing is the most common cause of brakes that grab.
to check your bearings, jack up the trailer and secure it on adequate capacity jack stands.
Check wheels for side-to-side looseness.

If the wheels are loose, or spin with a wobble, the bearings must be serviced or replaced.

WARNING

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



If your axle(s) are equipped with a grease zerk on the ends of the axle(s), the bearings must be greased every 6 months or 6,000 miles to ensure reliable and safe operation of your trailer.

1. Remove the rubber plug from the axle end.
2. Place grease gun on zerk.
3. Pump grease until new grease begins to appear. Use a different color grease each time so you will know when the new grease begins to appear.
4. Install rubber plug and cap. Repeat for remaining wheel bearings. If your trailer axle(s) are not equipped with grease zerks, refer to the axle manufacturer's manual for service and maintenance information.

9.2.10 Lubrication

Lubricate tilt deck pivots and hydraulic cylinder ends every month (if equipped).

9.2.11 Hydraulic Reservoir

Check fluid level prior to towing the trailer. The reservoir is located on the RS frame rail

The tilt deck must be fully lowered before checking fluid level. The reservoir should be filled to the full mark on the side of the reservoir.

Use quality hydraulic fluid with anti-wear properties, rust and oxidation inhibitors. Fluid ejecting from the reservoir could indicate a low battery.

9.2.12 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

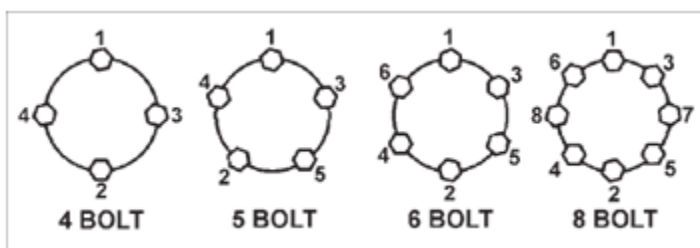
Metal creep between the wheel rim and lug nuts or bolts can cause rim to loosen.

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.

**! WARNING**

Stainless encapsulated lug nuts need to be installed with a 7/8" socket. Over torquing these nuts will destroy stainless cap. Do not use and replace if Cover is damaged

Lug Nut torque Chart			
Wheel Size (Tire Size)	Lug Nut Type	Steel Wheel Recommended torque	Aluminum Wheel Recommended torque
15" (205/75R15 OR 225/75R15)	1/2" Cone Nut	100-120 ft lbs	110-120 ft lbs
16" (235/80R16)	9/16" Cone Nut	110-120 ft lbs	125-130 ft lbs
16" (235/80R16)	5/8" Fixed Flange Nut	275-325 ft lbs	-----
16" (235/80R16)	5/8" 2-Piece Swivel Nut	-----	150 ft lbs
17.5" (215/75R17.5)	9/16" Cone Nut	125-130 ft lbs	125-130 ft lbs
17.5" (215/75R17.5)	9/16" 2-Piece Swivel Nut	140-165 ft lbs	140-165 ft lbs
17.5" (215/75R17.5 OR 235/75R17.5)	5/8" 2-Piece Swivel Nut	150-175 ft lbs	150-175 ft lbs
17.5" (215/75R17.5 OR 235/75R17.5)	5/8" Fixed Flange Nut	275-325 ft lbs	-----
17.5" (215/75R17.5)	M22-1.5 2-Piece Swivel Nut	450-500 ft lbs	450-500 ft lbs
*** FOR DUAL WHEEL APPLICATIONS, USE OUTER WHEEL FOR RECOMMENDED TORQUE***			

10. Trailer Ramps

The Capacity of all equipment trailer ramp sets is the payload of the trailer. This means that if the GVWR is 14,000lbs and the trailer weighs 3,000lbs, the ramp set has a capacity of 11,000 lbs (or 5,500 per ramp)

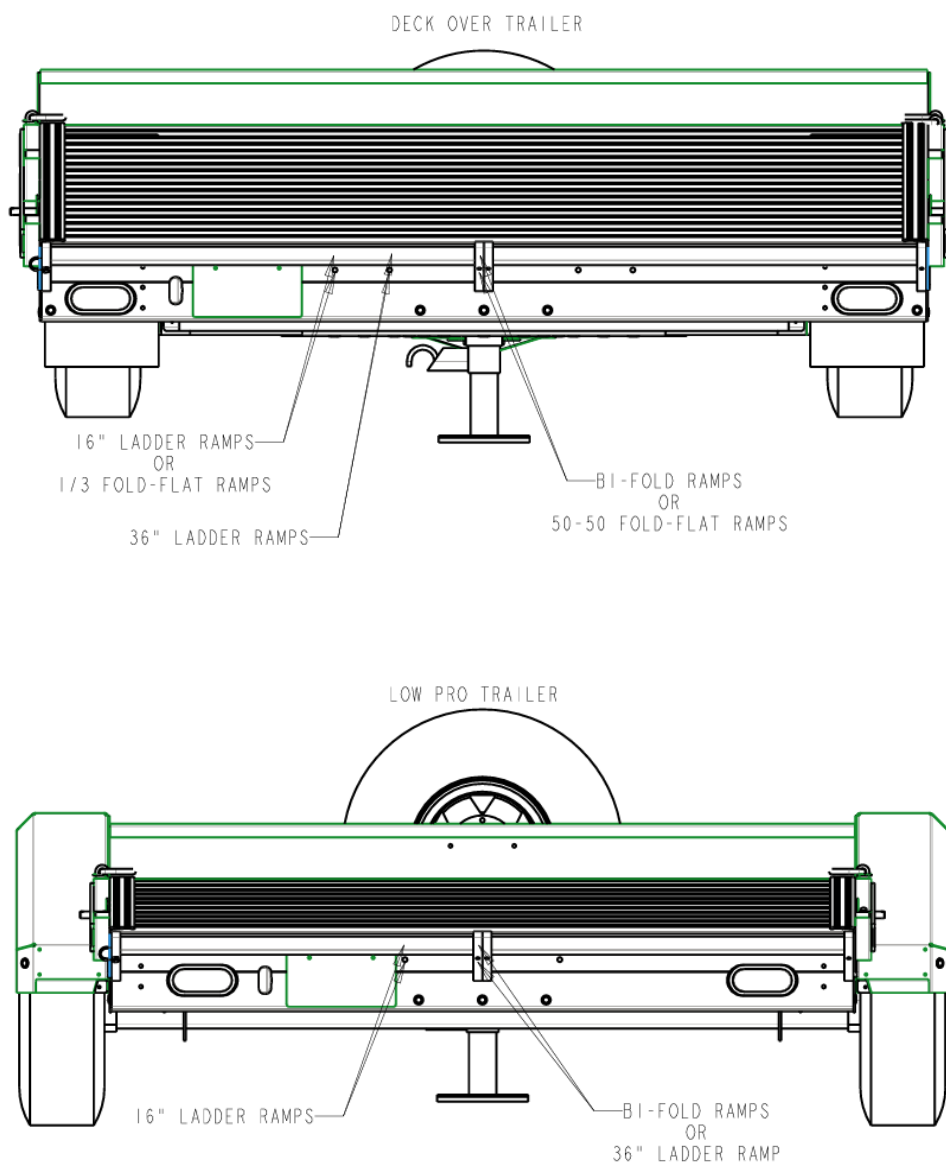
****Capacity exceptions are the bi-fold ramps and some slide-out ramps****

Bi-fold Ramps are rated for up to a 6,000lb wheeled vehicle, tracked vehicles are not recommended



10.1 Ramp Lugs and Adjustments

Bolt on ramp lugs needs to be adjusted based on the ramp type. Unbolt ramp lugs front back side of buckplate, shift to correct position, and reinstall. Lock nuts should not be reused. Failure to have lugs are correct position can lead to ramp tube failure



10.2 Fold-Flat Ramps

50-50-fold flat ramps with knuckles, cannot be stored upright (at 90 degrees) as this will block license plate and taillights.

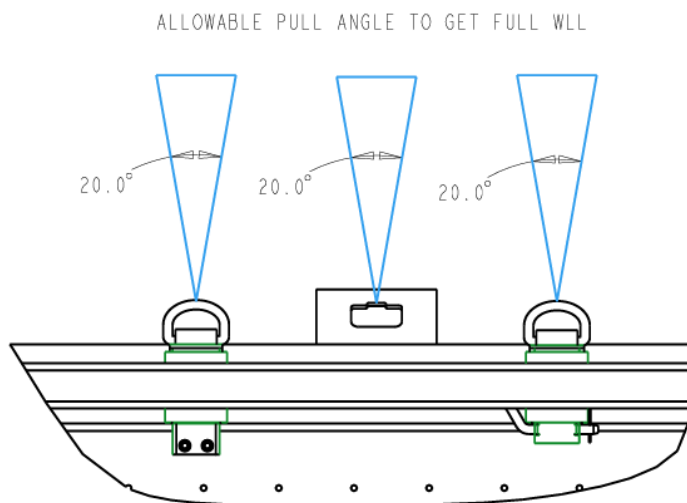
All fold flat ramps are not drive over ramps when in folded position, only meant to extend the deck for longer items, that are evenly distributed. These are items such as long wood boards, plastic pipes or long skids of materials. Heavy point loaded items will lead to failure of ramp bottom sheet

11. Cargo Securing

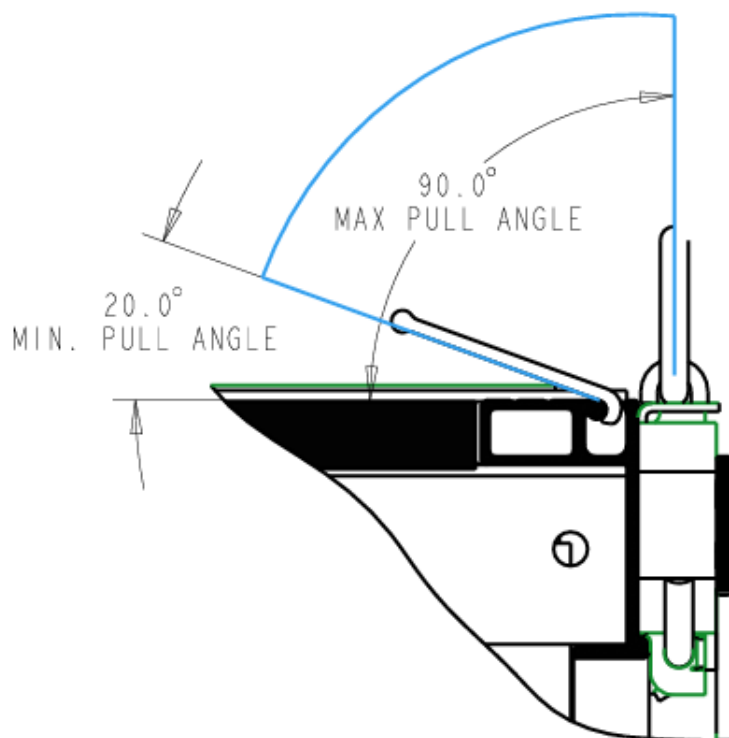
11.1 Pocket D-ring and Aluminum Siderail Tie Plate

The working load limit (WLL) of both the pocket d-ring and siderail tie plate is 5,000lbs.

When using these tie points, the angle of which the strap is pulling on the tie point needs to be perpendicular to the siderail, with a tolerance of plus or minus 10 degrees



The angle that the strap can be pulling from the siderail is from vertical (straight up) to 20 degrees off the deck



11.2 Cargo Securing to an Eby Trailer

Use only cargo-securement points that are appropriate for the type of tiedown being used and are rated for the load being secured. Inspect all tiedowns, hooks, fittings, and attachment points for damage before use.

Straps

Whenever possible, attach web straps to an Eby tie plate or D-ring. When a tie plate or D-ring is not available near the required securement location, a properly sized strap hook may be attached to an aluminum stake pocket or the designated structural side rail.

The hook must be fully seated and securely engaged so that it cannot slip, twist, or become disconnected during transport. Route the strap behind or inboard of the rub rail whenever possible so the rub rail protects the strap from contact with external objects.



! WARNING

Do not attach a strap directly to the rub rail. The rub rail is not a rated cargo-securement point and is intended only to protect straps attached to the stake pockets or structural side rail.

Chains

Attach chain tiedowns only to a designated chain-compatible attachment point, such as a chain tie plate or D-ring.

Do not attach chains or chain hooks directly to:

- Aluminum stake pockets
- The structural aluminum side rail
- The rub rail
- Any other trailer component not specifically identified as a chain-securement point

Chains and chain hooks can concentrate loads and damage aluminum components that are not designed for chain attachment.

! WARNING

Attaching a tiedown to an unrated or damaged component can cause the attachment point to fail, allowing the cargo to shift or separate from the trailer. Cargo movement can result in loss of control, property damage, serious injury, or death.

11.3 Cargo Securing with Tiedowns

Cargo must be properly positioned and secured so it cannot roll, tip, slide, shift, or fall from the trailer during loading, unloading, or transport. Cargo movement can cause loss of vehicle control and may result in property damage, serious injury, or death.

Use only tiedowns, chains, straps, binders, winches, hooks, anchor points, and other securement components that are suitable for the cargo being transported and are in good working condition. Do not use components that are cut, cracked, excessively worn, stretched, bent, corroded, or otherwise damaged.

Commercial users must comply with the Federal Motor Carrier Safety Administration cargo-securement requirements in 49 CFR Parts 392 and 393. Other users must comply with all applicable federal, state, and local requirements.

Securement-system capacity



The aggregate working load limit of the tiedowns used to secure an article, or group of articles, must be at least one-half the weight of the secured cargo.

Example: Cargo weighing 1,000 lbs requires an aggregate tiedown working load limit of at least 500 lb.

How each tiedown contributes to the aggregate working load limit depends on how it is attached:

- A tiedown extending from the trailer to an attachment point on the cargo generally contributes one-half of its working load limit.
- A tiedown extending over, through, or around the cargo and attaching to the opposite side of the trailer generally contributes to its full working load limit.

The working load limit of the entire securement system is limited by its lowest-rated component, including the tiedown, hook, binder, fitting, and trailer attachment point.

Minimum number of tiedowns

The following minimums apply when an individual article is not blocked or positioned to prevent forward movement:

Article Length	Article Weight	Minimum Tiedowns
5 ft or less	1,100 lb or less	1
5 ft or less	More than 1,100 lb	2
More than 5 ft through 10 ft	Any weight	2
More than 10 ft	Any weight	2 for the first 10 ft, plus 1 for each additional 10 ft or fraction thereof

For example:

- An article 11 ft long requires at least 3 tiedowns.
- An article 20 ft long requires at least 3 tiedowns.
- An article 21 ft long requires at least 4 tiedowns.

If an article is properly blocked, braced, or otherwise immobilized against forward movement, it must have at least one tiedown for every 10 ft of length or fraction thereof. These minimum quantities are in addition to the aggregate working-load-limit requirement.

Heavy vehicles, equipment, and machinery

A vehicle, machine, or item of equipment operating on wheels or tracks weighing 10,000 lbs or more must be restrained against forward, rearward, lateral, and vertical movement with



a minimum of four tiedowns. Attach the tiedowns as close as practical to the front and rear of the equipment or to securement points specifically designed for that purpose.

Lower and secure accessory equipment, such as buckets, blades, booms, or hydraulic attachments, unless the equipment manufacturer provides an approved transport position and locking method. Articulated equipment must be restrained against articulation during transport.

Additional securement requirements

- Cargo that may roll must be restrained with chocks, wedges, cradles, or another effective method.
- Adjacent articles secured by transverse tiedowns must be in direct contact or prevented from shifting toward one another.
- Tiedowns must be secured so they cannot loosen, unfasten, open, or release during transport.
- Do not tie knots in straps, ropes, or other tiedowns.
- Use edge protection anywhere a tiedown may be cut or abraded by the cargo.
- Route tiedowns inboard of the trailer rub rail whenever practical.
- Do not attach tiedowns to the rub rail unless the rub rail is specifically identified and rated by M.H. Eby as a cargo-securement point.
- Inspect the cargo and all securement devices before transport and periodically during the trip. Commercial drivers must conduct the inspections required by 49 CFR 392.9.

WARNING

Improperly secured cargo can shift or fall from the trailer, resulting in loss of control, property damage, serious injury, or death. Use an adequate number of properly rated tiedowns and approved cargo-securement points. Comply with all applicable cargo-securement requirements before towing.

11.4 Federal Tiedown Working Load Limits (WLL)

The following working load limits are federal default ratings used to determine the WLL of unmarked chain and synthetic webbing. Use the manufacturer-marked WLL whenever it is present and legible.



Chain					
Size	Grade 30 proof coil	Grade 43 High test	Grade 70 Transport	Grade 80 Alloy	Grade 100 Alloy
1/4 in	1,300 lbs	2,600 lbs	3,150 lbs	3,500 lbs	4,300 lbs
5/16 in	1,900 lbs	3,900 lbs	4,700 lbs	4,500 lbs	5,700 lbs
3/8 in	2,650 lbs	5,400 lbs	6,600 lbs	7,100 lbs	8,800 lbs
7/16 in	3,700 lbs	7,200 lbs	8,750 lbs	---	---
1/2 in	4,500 lbs	9,200 lbs	11,300 lbs	12,000 lbs	15,000 lbs
5/8 in	6,900 lbs	13,000 lbs	15,800 lbs	18,100 lbs	22,600 lbs

Unmarked welded steel chain that cannot be identified by grade or WLL must be treated as Grade 30 Proof Coil chain. Common grade markings include 3, 30, or 300 for Grade 30; 4, 43, or 430 for Grade 43; 7, 70, or 700 for Grade 70; 8, 80, or 800 for Grade 80; and 10, 100, or 1000 for Grade 100.

Synthetic webbing	
Width	WLL
1-3/4 in	1,750 lbs
2 in	2,000 lbs
3 in	3,000 lbs
4 in	4,000 lbs

These width-based values apply when the webbing does not have a legible manufacturer-applied WLL. If the strap is marked with a different WLL, use the marked rating.

Note: These values are federal default working load limits for unmarked tiedown material. The working load limit of a complete tiedown assembly is limited by its lowest-rated component, including the chain or strap, hook, binder, fitting, tensioner, and trailer attachment point.



! WARNING

Never exceed the working load limit of a tiedown or any component in the securement system. Do not use tiedowns that are cut, frayed, stretched, cracked, bent, excessively worn, corroded, or otherwise damaged. Failure of a tiedown or attachment point can allow cargo to shift or separate from the trailer, resulting in loss of control, serious injury, or death.

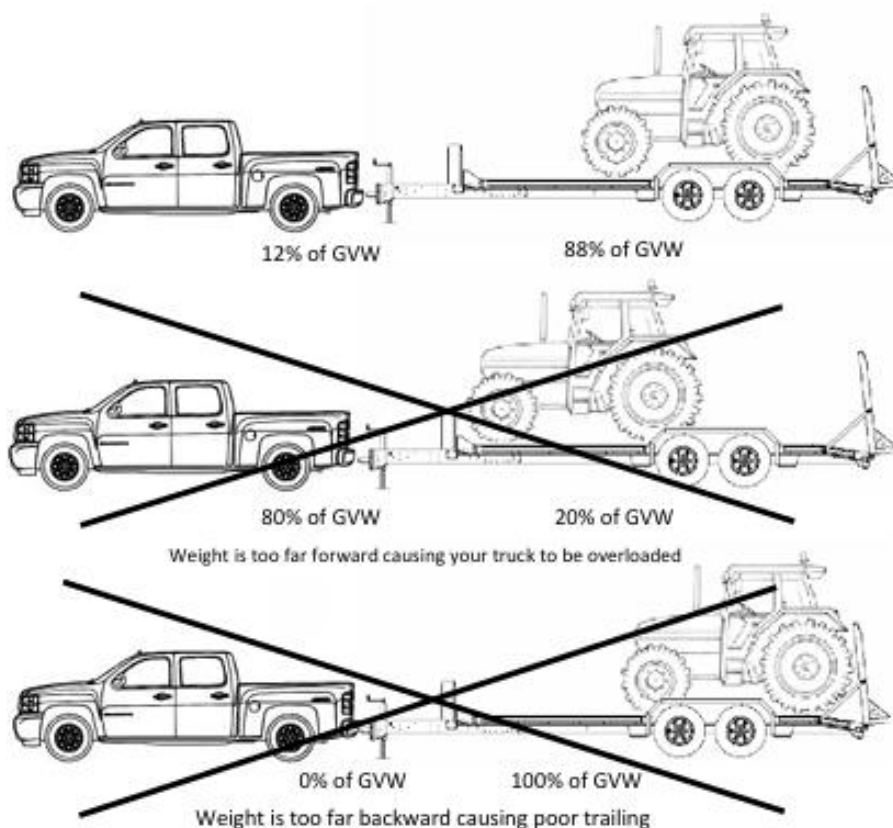
11.5 Trailer Loading

11.5.1 Weight Distribution and Trailer Rake

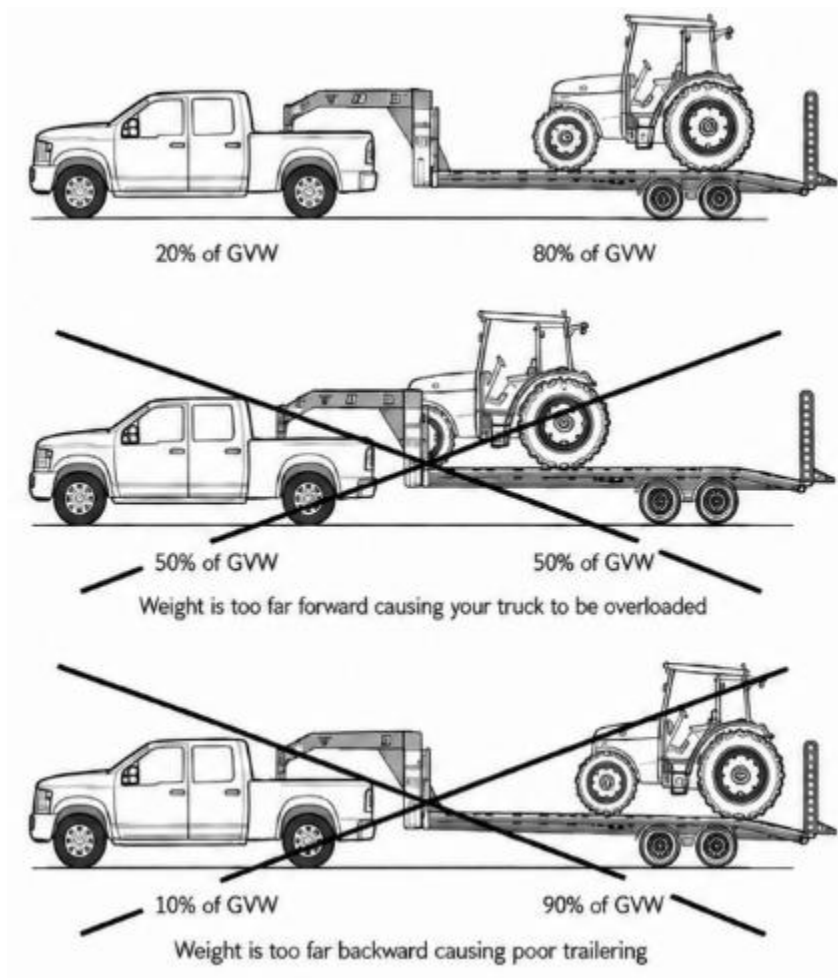
Weight Distribution - Proper weight distribution is important.

Diagrams below show different ways that cargo could be loaded and the weight distribution on the hitch and axles of the trailers.

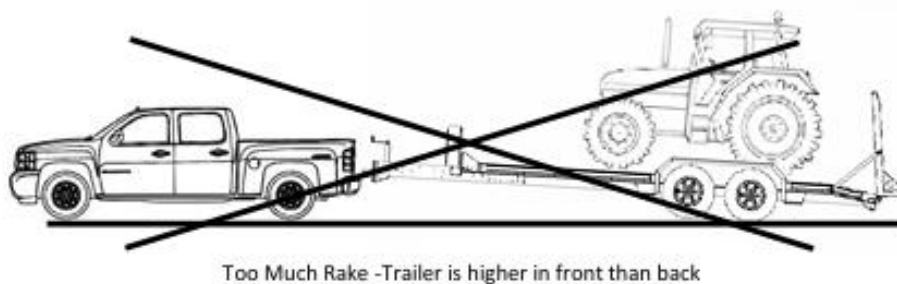
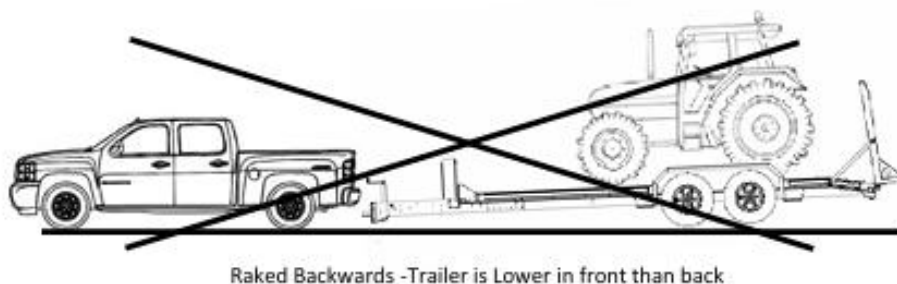
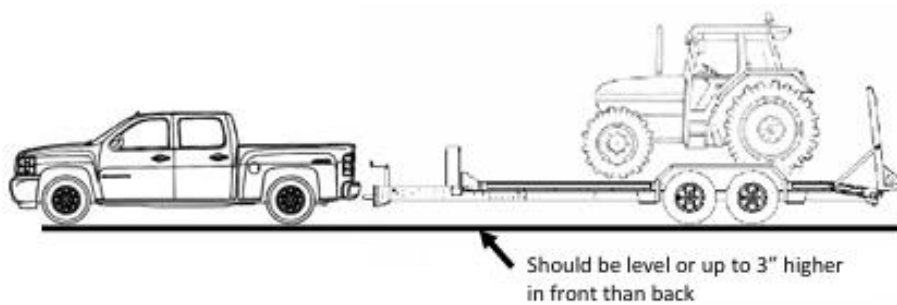
For bumper-pull trailers, tongue weight should generally be 10% to 15% of the trailer's actual loaded weight. Loaded Weight is Payload + Trailer Weight

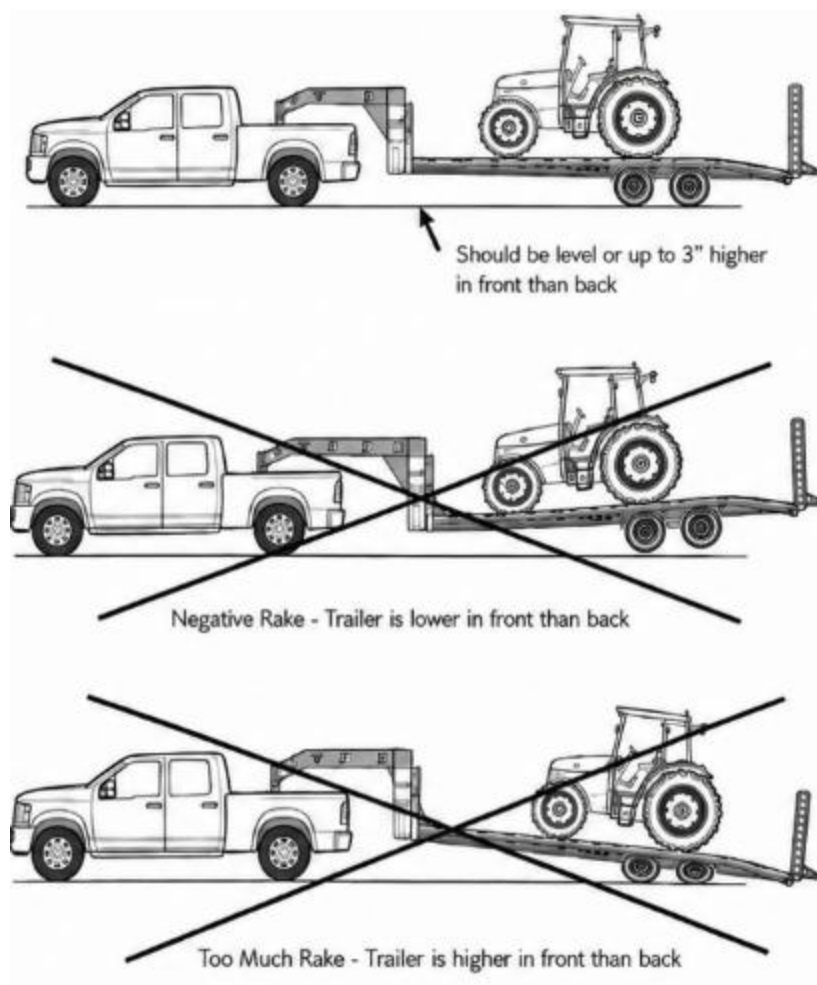


For gooseneck trailers, gooseneck hitch weight should be approximately 20%-25% of the trailer's actual loaded weight, unless a different range is specified by M.H. Eby for the trailer model.



Hitch Height - Making sure that the rake of your trailer is correct is extremely important. This will affect the way your trailer tows, how your tires wear and, of extreme importance, how your brakes perform.





12. Trailer Specific Information

12.1 Kneeling Trailer (KN14K)

The Eby KN14K Kneeling Trailer is designed for loading and transporting forklifts, scissor lifts, and other low-clearance machinery. Its kneeling suspension lowers the trailer deck to provide an approximately 6-degree loading angle.

The KN14K uses a power-up, power-activated gravity-down hydraulic system. Counterbalance valves hydraulically lock the axle-positioning cylinders when the hydraulic controls are released. During lowering, the hydraulic system opens the counterbalance valves, allowing the trailer to lower under its own weight.

The hydraulic system does not replace the mechanical transport lock. The trailer must be fully raised and mechanically locked before towing.



! WARNING

The trailer frame, deck, axles, suspension components, and hydraulic cylinders move while the trailer is being raised or lowered. This movement can crush or sever body parts and may result in serious injury or death.

Before raising or lowering the trailer:

- Securely couple the trailer to the tow vehicle.
- Park the trailer and tow vehicle on firm, level ground.
- Apply the tow vehicle parking brake.
- Keep all people clear of the trailer, axles, wheels, suspension, and underside of the deck.
- Never place any part of your body beneath the trailer unless it is supported by properly rated mechanical supports.
- Do not operate the trailer if the hydraulic system, axle locks, mechanical lock, or controls are damaged or malfunctioning.

12.1.1 KN14K Operating Procedure

1. Prepare the trailer.

Securely couple the trailer to the tow vehicle and park on firm, level ground. Apply the tow vehicle parking brake and make sure the loading area is clear of people, equipment, and obstructions.

2. Unlock the trailer.

Move the trailer lock control completely to the UNLOCK position. This disengages the mechanical locking pins from the front axle and enables operation of the hydraulic system.

Visually confirm that the locking pins are fully disengaged before attempting to lower the trailer.



3. Lower the trailer.

Activate and hold the hydraulic LOWER control. Hydraulic pressure opens the cylinder counterbalance valves, allowing the trailer to lower under its own weight.

Continue lowering until the deck is fully supported on the ground and there is no more movement downward, then release the control.

Stop immediately if the trailer lowers unevenly, contacts an obstruction, or produces unusual movement or noise.



4. Load the equipment.

Slowly drive or move the equipment onto the trailer in a straight line. Avoid sudden acceleration, braking, or steering while entering the trailer.

Position the equipment to provide proper front-to-rear and side-to-side weight distribution. Refer to Section 11.2 through 11.4, Trailer Loading and Weight Distribution, for additional information.

! WARNING

Loading on sloped, soft, or uneven ground can cause the trailer or equipment to shift, tip, or roll. Load and unload only on firm, level ground. Keep bystanders clear and operate the equipment slowly.

5. Raise the trailer.

After the equipment has been positioned, activate and hold the hydraulic RAISE control until the trailer reaches its full transport height and hydraulic movement stops.

Release the control promptly when the trailer is fully raised. Do not continue operating the pump after full height has been reached.

6. Engage the mechanical lock.

Move the trailer lock control completely to the LOCK position. Visually confirm that the front-axle locking pins are fully engaged.

If the lock cannot be engaged, operate the RAISE control again to confirm that the trailer is at full transport height. Do not force the lock into position.

! WARNING

Hydraulic pressure alone must not be used to retain the trailer in the raised position during transport. Do not tow the trailer unless it is fully raised and the mechanical locking pins are completely engaged.

7. Secure the equipment.

Secure the equipment using the in-floor chain tie points and properly rated 3/8-inch Grade 70 transport chain, binders, and attachment hardware.



Use an adequate number of tiedowns and secure the equipment against forward, rearward, lateral, and vertical movement. Refer to the cargo-securement requirements in Section 10.2.

Secure movable equipment components, including forks, platforms, booms, buckets, blades, and attachments, in their designated transport positions.

8. Complete the pre-tow inspection.

Before towing, verify that:

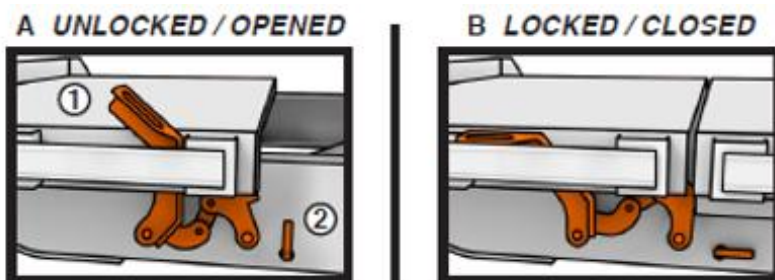
- The trailer is fully raised.
- The front-axle mechanical locking pins are fully engaged.
- The hydraulic controls have returned to their neutral or off position.
- There are no visible hydraulic leaks.
- The equipment is positioned for proper weight distribution.
- All tiedowns are properly attached and tensioned.
- No tiedown is attached to an unapproved trailer component.
- All general pre-tow inspection requirements have been completed.

! WARNING

Never tow the KN14K while it is lowered, partially raised, or mechanically unlocked. Towing without the locking pins fully engaged may allow the trailer or axles to move unexpectedly, resulting in loss of control, trailer damage, serious injury, or death.

12.2 Tilt Trailer (GT14/GT16K)

This section contains operating instructions specific to Eby GT14K and GT16K gravity-tilt trailers. Before operating the trailer, read and understand Section 6.1.3, Loading a Manual Gravity-Tilt Trailer, including all warnings and loading instructions. The instructions in this section supplement, but do not replace, the requirements in Section 6.1.3



GT14K/GT16K Gravity-Tilt Operation

1. Release the mechanical latch.
Locate the mechanical latch on the roadside of the trailer at the rear of the permanent deck. Fully disengage the latch before attempting to tilt the deck.



2. Open the hydraulic control valve.

The valve is located to the right of the mechanical latch. Rotate the valve to the vertical position to open it. The horizontal position is closed.

3. Lower the tilt deck to the loading position.

- Empty trailer: Apply downward force at the designated rear area of the tilt deck until the deck begins to tilt. Remain clear of the rear edge and step away as the deck lowers to the ground.
- Loaded trailer: Slowly move the equipment rearward until the deck begins to tilt. Stop the equipment and allow the rear of the deck to contact the ground before continuing to unload.
- If the deck must remain lowered while loading multiple items or longer equipment, close the hydraulic valve after the deck has fully contacted the ground.

4. Load the equipment or return the empty deck to the transport position.

- When loading: Slowly drive the equipment forward onto the lowered deck. When the deck begins to return to the transport position, stop and allow it to lower fully onto the trailer frame. Continue positioning the equipment until proper load distribution is achieved.
- Empty trailer: Apply downward force at the designated front area of the tilt deck until the deck returns fully to the transport position.

5. Secure the deck for travel.

Fully engage the mechanical latch and rotate the hydraulic control valve to the horizontal, closed position. Visually confirm that both the latch and valve are secured before towing.

! WARNING

Do not tow the trailer unless the tilt deck is fully seated, the mechanical latch is locked, and the hydraulic control valve is closed. An unsecured deck may move during transport, resulting in loss of control, serious injury, or death

12.3 Dump Trailer (CB10K/CB14K/CB16K)

Eby dump trailers may be equipped with a front-mounted telescopic hydraulic cylinder. Mounting the cylinder near the front of the dump body provides direct lifting force without a conventional underbody scissor hoist.

The telescopic cylinder is a power-up, gravity-down design. The hydraulic power unit extends the cylinder to raise the dump body. When the DOWN control is activated,



hydraulic fluid returns to the reservoir and the weight of the dump body lowers it onto the trailer frame.

! WARNING

A raised or moving dump body can fall or lower without warning because of hydraulic failure, component damage, control operation, or load movement. Contact with a moving dump body can result in serious injury or death.

Keep all people clear of the trailer while raising or lowering the dump body. Never place any part of your body beneath a raised dump body unless the body is empty and supported by the factory-installed safety prop in its designated support position.

12.3.1 Before Dumping / Raising the Tub

Before raising the dump body:

1. Securely couple the trailer to a properly rated tow vehicle.
2. Park the tow vehicle and trailer in a straight line on firm, level ground.
3. Apply the tow vehicle parking brake.
4. Keep the tow vehicle engine running only when required to support the trailer's electrical or hydraulic system.
5. Make sure the dumping area is clear of people, vehicles, buildings, overhead obstructions, and power lines.
6. Inspect the hydraulic cylinder, hoses, fittings, hinges, tailgate, door latches, and controls for leaks, looseness, or damage.
7. Verify that the load is evenly distributed from side to side and is suitable for dumping.
8. Remove or secure any tarp in accordance with the tarp manufacturer's instructions.
9. Configure and secure the rear doors or tailgate in the correct position for the intended dumping operation.
10. Remove the stabilizer legs from their travel position and deploy them when required for the trailer configuration and operating procedure.

! WARNING

Raising a loaded dump body raises the trailer's center of gravity. Soft ground, side slopes, uneven loading, a trailer positioned at an angle to the tow vehicle, or a load that releases unevenly can cause the trailer to tip or roll over.

Dump only while securely coupled to the tow vehicle and positioned in a straight line on firm, level ground. Do not dump across a slope or on ground that cannot support the trailer and tow vehicle.



! WARNING

A raised dump body can contact overhead electrical lines. Contact with or proximity to energized lines can cause electrocution, serious injury, or death. Inspect the area above and around the trailer before raising the dump body. Maintain all required clearance from electrical lines and overhead obstructions.

12.3.2 Dumping the Load / Raising the Tub

1. Confirm that all people are clear of the trailer and dumping area.
2. Release and secure the rear doors or tailgate in the intended operating position. Use the factory-installed door holdbacks where provided.
3. From the designated operating position, press and hold the UP control.
4. Observe the dump body, load, trailer, and tow vehicle continuously while the body is rising.
5. Release the control when the desired dump angle is reached or when the cylinder reaches full extension.
6. Do not continue operating the pump after the cylinder is fully extended.
7. Allow the load to discharge without moving or shaking the trailer.
8. If the load does not discharge normally, lower the dump body completely and determine the cause before attempting to dump again.

! WARNING

Cargo can discharge suddenly and may roll, slide, or fall beyond the rear and sides of the trailer.

Keep all people out of the dumping area. Never stand behind, beside, or beneath a raised dump body or discharged load.

! WARNING

Frozen, compacted, wet, sticky, or unevenly distributed material may remain in the dump body as it is raised. A retained load can suddenly release or shift the trailer's center of gravity, causing instability or rollover.

Do not drive forward, brake suddenly, jerk the trailer, or raise the body beyond its normal operating limit to dislodge a stuck load. Lower the body completely before correcting the condition.

12.3.3 Lowering the Dump Trailer Tub

1. Confirm that all people and equipment are clear of the trailer.
2. Press and hold the DOWN control.
3. Observe the entire lowering operation.
4. Confirm that the dump body lowers evenly and seats completely on the trailer frame.



5. Release the control when the body is fully lowered.
6. Close and secure the rear doors or tailgate.
7. Return door holdbacks, stabilizer legs, tarp components, and all other equipment to their travel positions.
8. Inspect for hydraulic leaks, damage, or material lodged between the body and frame.
9. Complete the pre-tow inspection before moving the trailer.

WARNING

Never tow the trailer with the dump body raised or partially raised. Before towing, verify that the dump body is fully seated, the rear doors or tailgate are closed and latched, the stabilizers are in their travel position, and all equipment is secured.

12.3.4 Raised-Tub & Safety Prop

Use the factory-installed safety prop whenever inspection or service requires access beneath the raised dump body.

1. Empty the dump body completely.
2. Securely couple the trailer to the tow vehicle.
3. Park on firm, level ground and apply the tow vehicle parking brake.
4. Raise the dump body only high enough to position the safety prop.
5. Place the safety prop fully into its designated support position.
6. Slowly lower the dump body until its weight is supported by the prop.
7. Release hydraulic pressure before entering the area beneath the body.
8. Confirm that the prop is stable and properly seated before beginning work.

WARNING

Hydraulic pressure is not a mechanical support. A hydraulic hose, fitting, valve, cylinder, electrical control, or other component can fail without warning.

Never work beneath a raised dump body supported only by the hydraulic system. Use only the factory-installed safety prop in its designated position. Never use lumber, concrete blocks, jacks, or improvised supports.

The safety prop is intended to support the empty dump body only. Never position the safety prop beneath a loaded dump body.

12.3.5 Three-Stage Telescopic Cylinder — CB14K/CB16K

The CB14K and CB16K use a three-stage telescopic cylinder with the following nominal bore sizes and theoretical extension forces at the Eby operating pressure:



Cylinder stage Bore diameter Approximate force at 2,500 psi

First stage 3.00 in 17,675 lb

Second stage 2-3/8 in 11,075 lb

Third stage 1-3/4 in 6,000 lb

- Maximum cylinder pressure: 3,000 psi
- Eby system operating pressure: 2,500 psi

NOTICE

The forces shown are theoretical cylinder extension forces at the stated hydraulic pressure. They are not trailer payload ratings, dump-body capacities, or allowable cargo weights. Actual lifting capacity depends on dump-body geometry, cylinder angle, load position, friction, and other system conditions.

WARNING

Never adjust, bypass, or replace the hydraulic pressure-relief valve with a higher setting. Increasing hydraulic pressure can overload the cylinder, mounting structure, hoses, fittings, dump body, or trailer frame and may cause sudden component failure.

12.3.6 Telescopic Cylinder Bleeding Procedure

This procedure applies only to telescopic cylinders equipped with the designated bleed screw at the top of the cylinder. Perform this procedure when cylinder movement is jerky or after the hydraulic system has been opened for service.

Required items

- 1/8-inch Allen wrench
- Clean, dry shop rag or absorbent towel
- Safety glasses
- Oil-resistant gloves
- Correct hydraulic fluid for the trailer

WARNING

Hydraulic fluid escaping under pressure can penetrate the skin and cause serious injury. Wear eye and hand protection. Do not use your hand to check for leaks. Keep your face and body away from the bleeding port.
If fluid is injected beneath the skin, seek immediate emergency medical treatment.



Bleeding steps

1. Empty and prepare the trailer.
Remove all cargo from the dump body. Securely couple the trailer to the tow vehicle and park on firm, level ground. Apply the tow vehicle parking brake and keep all people clear.
2. Check the hydraulic-fluid level.
With the dump body fully lowered, verify that the reservoir contains the correct fluid at the specified level. Do not overfill the reservoir.
3. Slightly raise the dump body.
Briefly press the UP control until the front of the dump body rises approximately 1 inch. Release the control.
4. Locate the bleed screw.
Locate the bleed screw at the top of the telescopic cylinder. Position a clean rag around the screw to contain escaping fluid.
5. Vent the cylinder.
Using a 1/8-inch Allen wrench, slowly loosen the bleed screw approximately one turn. Do not completely remove the screw.
6. Close the bleed screw.
Allow trapped air to escape. As soon as a steady flow of hydraulic fluid without visible air appears, immediately tighten the bleed screw.
7. Clean and inspect.
Wipe away spilled fluid and inspect the bleed screw for leakage.
8. Cycle the cylinder.
Fully raise the empty dump body, releasing the UP control promptly when the cylinder reaches full extension. Then fully lower the dump body.
9. Allow the fluid to settle.
Leave the dump body fully lowered for at least one minute.
10. Repeat as necessary.
Repeat Steps 2 through 9 until no additional air escapes and the cylinder extends and retracts smoothly.
11. Complete the procedure.
With the dump body fully lowered, check the hydraulic-fluid level and add only the approved fluid as needed. Inspect the cylinder, bleed screw, hoses, and fittings for leakage.

NOTICE

Monitor the reservoir during the procedure. Operating the pump with insufficient fluid can introduce additional air and damage the hydraulic system. Adding too much fluid can cause the reservoir to overflow when the cylinder retracts.



! WARNING

Keep everyone out of the dump body, clear of the frame, hinges, cylinder, tailgate, and all pinch points during the entire bleeding procedure. Do not reach beneath the dump body or between the body and frame.

Stop the procedure and contact an authorized M.H. Eby dealer if:

- The cylinder continues to move in a jerky or irregular manner.
- A cylinder stage extends or retracts out of sequence.
- Hydraulic fluid appears foamy or milky after repeated cycling.
- The bleed screw, cylinder, hose, or fitting leaks.
- The dump body will not raise or lower normally.
- Unusual noises, binding, deformation, or structural movement are observed.

13. Trailer Wiring

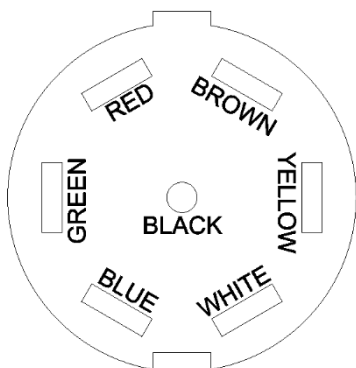
All Eby equipment trailers are manufactured with a 7-way RV plug as standard at the front of the harness. The harness color code is as follows:

Identify circuits by connector-terminal position and circuit function. Wire colors shown are typical and may vary by model, production date, and installed options.

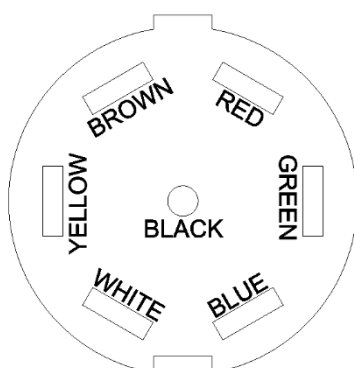
Circuit Function	Typical Wire Color
Ground	White
Aux Power	Red
Left Turn	Yellow
Right Turn	Green
Brake	Blue
Backup	Black
Clearance	Brown

The diagrams below show the standard 7-prong RV type plug used on Eby trailers. All Eby trailers meet the requirements of federal motor vehicle standard 108.

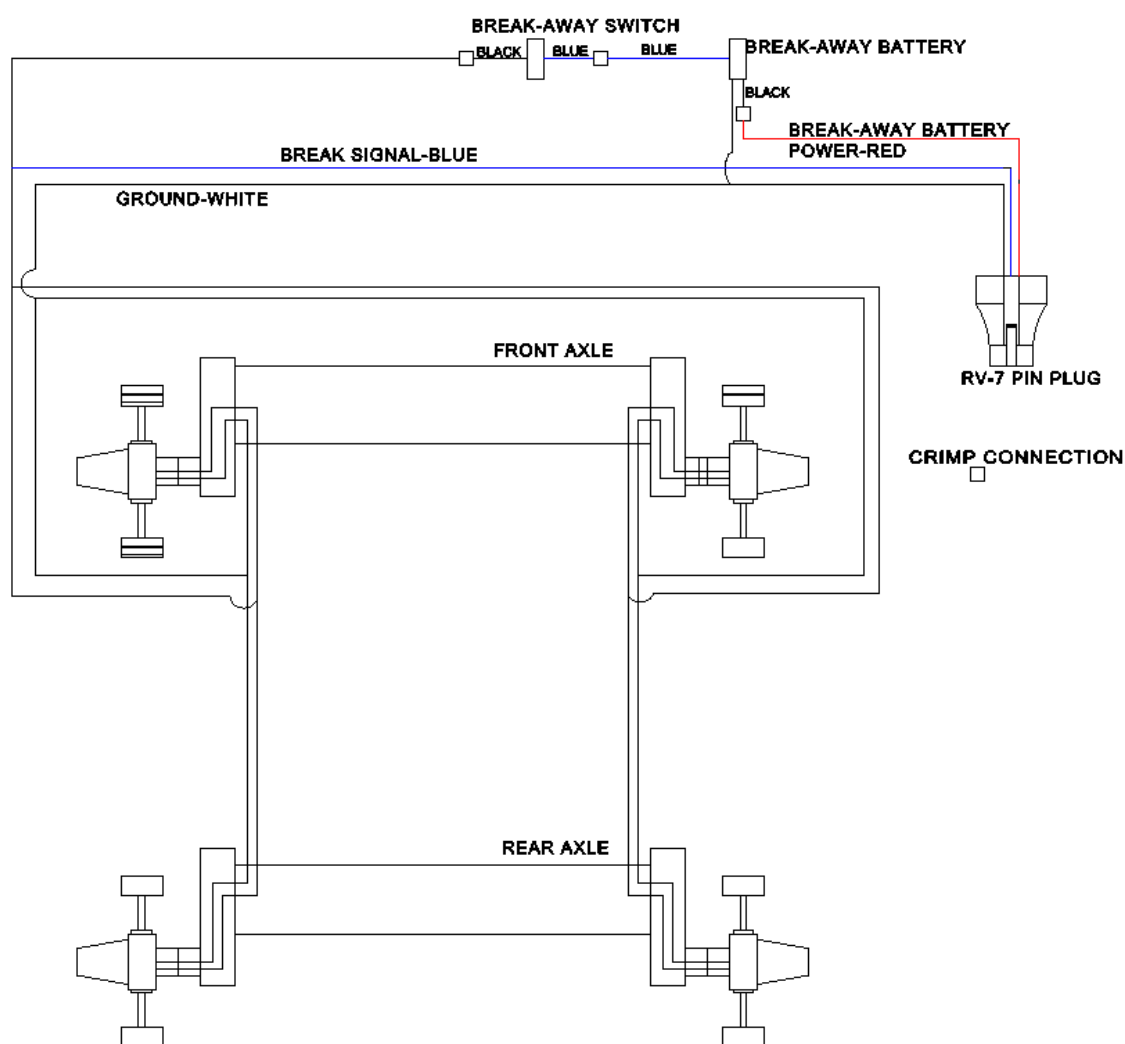




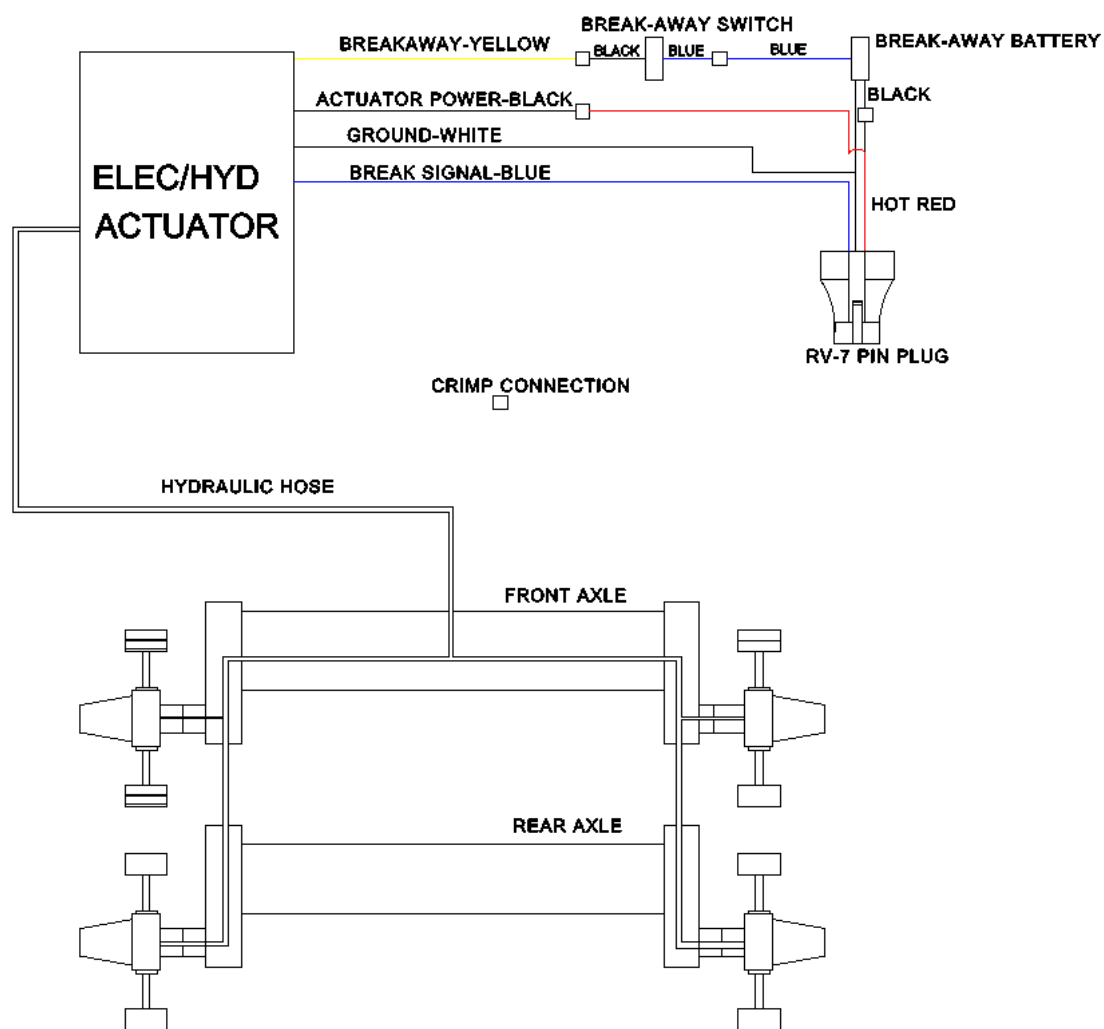
View From Trailer End



View From Tow Vehicle End



-Electric Brakes General Diagram



- Hydraulic Brakes General Diagram

13.1 Trailer Wiring Troubleshooting

Troubleshooting - Electric Brakes

Symptom	Causes	Remedies
No Brakes	Open Circuits	Find & Correct
	Severe Underadjustment	Adjust Brakes
	Faulty Controller	Test & Correct
	Short Circuit	Find & Correct
Weak Brakes	Grease or Oil on Magnets or Lining	Clean or Replace
	Corroded Connections	Clean & Correct cause of Corrosion
	Worn Linings or Magnets	Replace
	Scored or Grooved Brake Drums	Machine or Replace
	Improper Synchronization	Correct
	Corroded Connections	Clean & Correct cause of Corrosion
	Underadjustment	Adjust Brakes
	Glazed Lining	Reburnish or Replace
	Overloaded Trailer	Correct
	Underadjustment	Adjust
Locking Brakes	Improper Synchronization	Correct
	Faulty Controller	Test & Correct
	Loose, Bent or Broken Brake Components	Adjust Brakes
	Out-of-Round Brake Drums	Machine or Replace
	Insufficient Wheel Load	Adjust System Resistor and Synchronize
	Faulty Controller	Test & Correct
Intermittent Brakes	Broken	Repair or Replace
	Loose Connections	Find & Repair
	Faulty	Find & Repair



Troubleshooting - Electric Brakes Continued

Symptom	Causes	Remedies
Locking Brakes	Wrong Magnet Lead Wire Color	Correct
	Incorrect Adjustment	Adjust
	Grease or Oil on Lining or Magnet	Clean or Replace
	Broken Wires	Find & Repair
	Bad Connections	Find & Repair
Harsh Brakes	Underadjustment	Adjust
	Improper Synchronization	Correct
	Improper Controller	Change
	Faulty Controller	Test & Correct
Noisy Brakes	Underadjustment	Adjust
	Lack of Lubrication	Lubricate
	Broken Brake Components	Replace Component
	Incorrect Brake Components	Correct
Surging Brakes	Grease or Oil on Lining or Magnet	Clean or Replace
	Out-of-Round or Cracked Brake Drums	Machine or Replace
	Faulty Controller	Test & Correct
Locking Brakes	Overadjustment	Readjust
	Out-of-Round Brake Drums	Machine or Replace
	Incorrect Brake Components	Replace
	Loose, Bent or Broken Brake components	Find & Repair
	Loose Wheel Bearing Adjustment	Adjust
	Bent Spindle	Replace Axle



Troubleshooting - Hydraulic Brakes

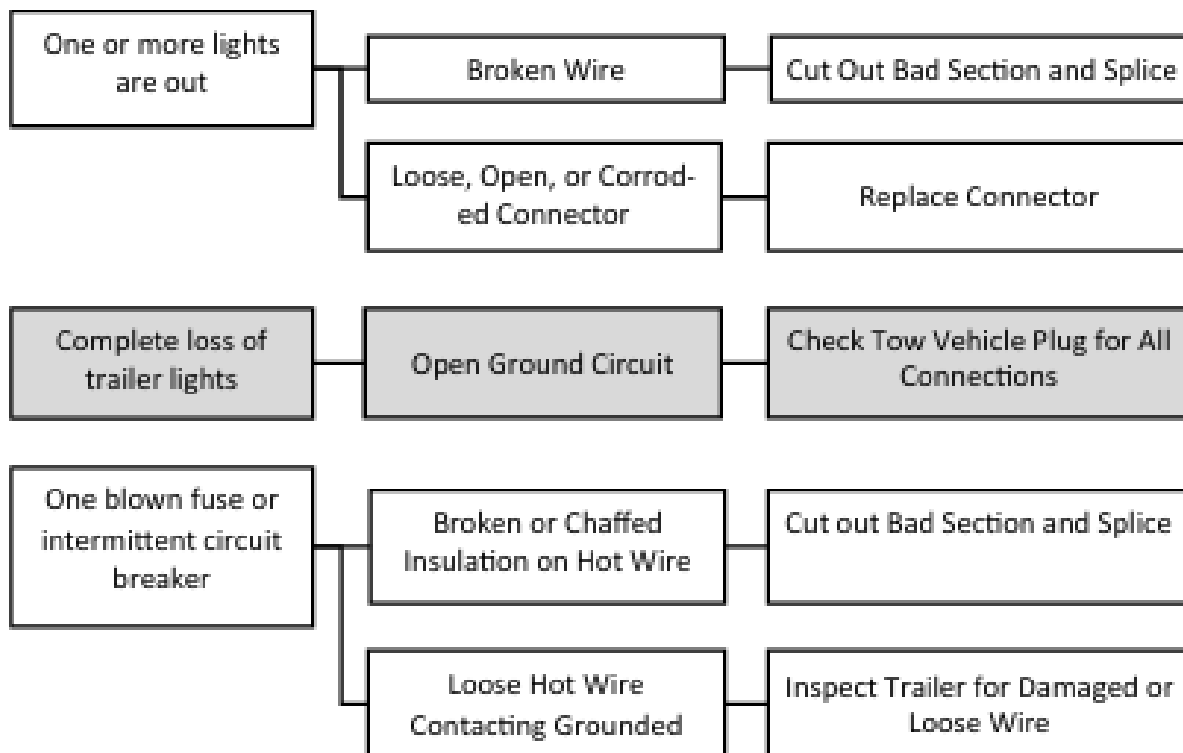
Symptom	Causes	Remedies
Noisy Brakes	Underadjustment	Adjust
	Lack of Lubrication	Lubricate
	Broken Brake Components	Replace Component
	Incorrect Brake Components	Correct
Locking Brakes	Loose, Bent or Broken Brake Components	Replace Components
	Underadjustment	Adjust
	Out-of-Round Drum	Machine or Replace
Pulls to One Side	Incorrect Tire Pressure	Inflate Evenly on Both Sides to Required Pressures
	Unmatched Tires on Same Axle	Match Tires on Axle
	Restricted brake Lines or Hoses	Repair or Replace
	Malfunctioning Cylinder Assembly	Check for Stuck or Sluggish Pistons
	Defective or Damaged Shoe and Lining	Install New Shoe and lining-Complete Axle
	One Side Out-of-adjustment	Adjust
Dragging	Improper Fluid	Replace Rubber Parts Fill with DOT4 Fluids
	Blocked Master Cylinder	Open with Compressed Air or Replace Cylinder
	Broken Brake Components	Replace Component
	Incorrect Brake Components	Correct



Troubleshooting - Hydraulic Brakes Continued

Symptom	Causes	Remedies
No Brakes	Broken or Kinked Brake Line	Repair or Replace
	Severe Underadjustment	Adjust Brakes
	Malfunctioning Actuation System	Troubleshoot System
Weak Brakes	Brake Adjustment Not Correct	Make Several Reverse Stops
	Excessively Worn Brake Lining	Replace Shoe and Lining
	Incorrect Lining	Replace Shoe and Lining
	Grease or Fluid Soaked Lining	Repair Grease Seal or Wheel Cylinder. Install New Shoe and Lining.
	Frozen Master Cylinder or Wheel Cylinder Pistons	Recondition or Replace All Cylinders, Brake Fluid
	Glazed Lining	Reburnish or Replace
	Excessive Drum Wear	Replace
	Trapped Air in Lines	Bleed System
	Overloaded Trailer	Correct
	Malfunctioning Actuating System	Troubleshoot System
Harsh Brakes	Brake Adjustment Not Correct	Make Several Reverse Stops
	Grease or Fluid on Lining	Replace Shoes and Linings
Surging Brakes	Out of Round Drums or Cracked Drums	Machine or Replace
	Grease or Fluid on Lining	Replace Shoes and Linings



Troubleshooting Lights:

14. Parts and Resources

All Eby retail facilities include a Parts Department. We inventory many parts to get you what you need fast. Eby parts are also available at many of our dealers, strategically located throughout North America. An equipment trailer parts list can be found on our website:

Eby Part and Service Main Page

<https://www.mheby.com/parts-service>

Equipment Trailer Part Catalog:

<https://www.mheby.com/resources/equipment-trailer-parts-catalog>

