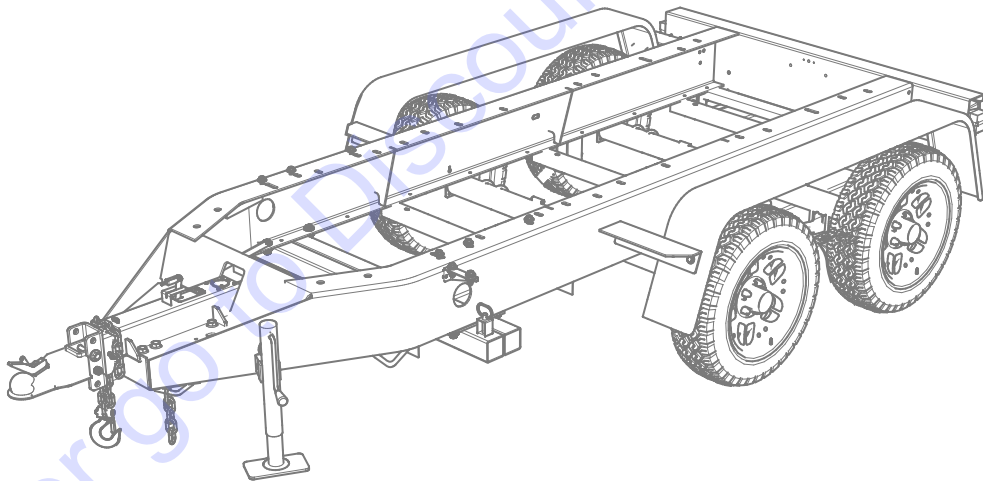


# OWNER'S MANUAL



## TRAILERS



Revision #6 (01/15/21)



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

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## IMPORTANT

Please read the supplied Owner's manual for operation and safety requirements. Serious injury and/or property damage can result if the instructions and warnings are not followed. Additional copies of the Owner's manual can be obtained from your dealer or by contacting Discount-equipment. If you do not have any of the manuals or instructions referred to in this manual.

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## NOTICE

Specifications and part numbers are subject to change without notice.

# SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.

## SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

## SAFETY SYMBOLS

**⚠ DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

**⚠ WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.





**⚠ CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

**NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts hazards


# SAFETY INFORMATION

## GENERAL SAFETY

### ⚠ CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.





- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.

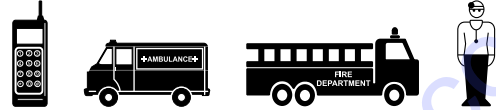


- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

### NOTICE


- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult to read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher. 
- **ALWAYS** know the location of the nearest first aid kit. 

- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.




## FUEL SAFETY

### ⚠ DANGER

- **DO NOT** start the engine near spilled fuel or combustible fluids. Diesel fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine. 

## TOWING SAFETY

### ⚠ CAUTION

- Check with your local county or state safety towing regulations, in addition to meeting **Department of Transportation (DOT) Safety Towing Regulations**, before towing your generator. 
- In order to reduce the possibility of an accident while

## SAFETY INFORMATION

transporting the generator on public roads, **ALWAYS** make sure the trailer and the towing vehicle are mechanically sound and in good operating condition.

- **ALWAYS** shutdown engine before transporting.
- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer “gross vehicle weight rating.”
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. **Trailer tires should be inflated to 50 psi cold.** Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a **safety chain**.
- **ALWAYS** properly attach trailer’s safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
  - Connect and test electric brake operation.
  - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is **55 MPH** unless posted otherwise. Recommended off-road towing is not to exceed **15 MPH** or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place **chock blocks** underneath wheel to prevent **rolling** while parked.
- Place **support blocks** underneath the trailer’s bumper to prevent **tipping** while parked.

- Use the trailer’s swivel jack to adjust the trailer height to a level position while parked.

### BATTERY SAFETY

#### DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



#### WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gasses.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.



#### CAUTION

- **ALWAYS** disconnect the **NEGATIVE battery terminal** before performing service on the generator.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.



# TRAILER COMPONENT IDENTIFICATION

Figure 1 represents typical trailer components. Although there are many variations, styles, and configurations of these components, i.e. frame types, number of axles, integrated fuel tanks, hydraulic or electric brake actuators, jacks and hub sizes, the basic function of these components is the same on most trailers. As an aid to the user, Multiquip has attempted to identify a variety of trailer components in this manual, some of which are not typically found on trailers that are manufactured by Multiquip. To assure proper use and safety, **ALWAYS** refer to the component manufacturer's owner's manual before use.

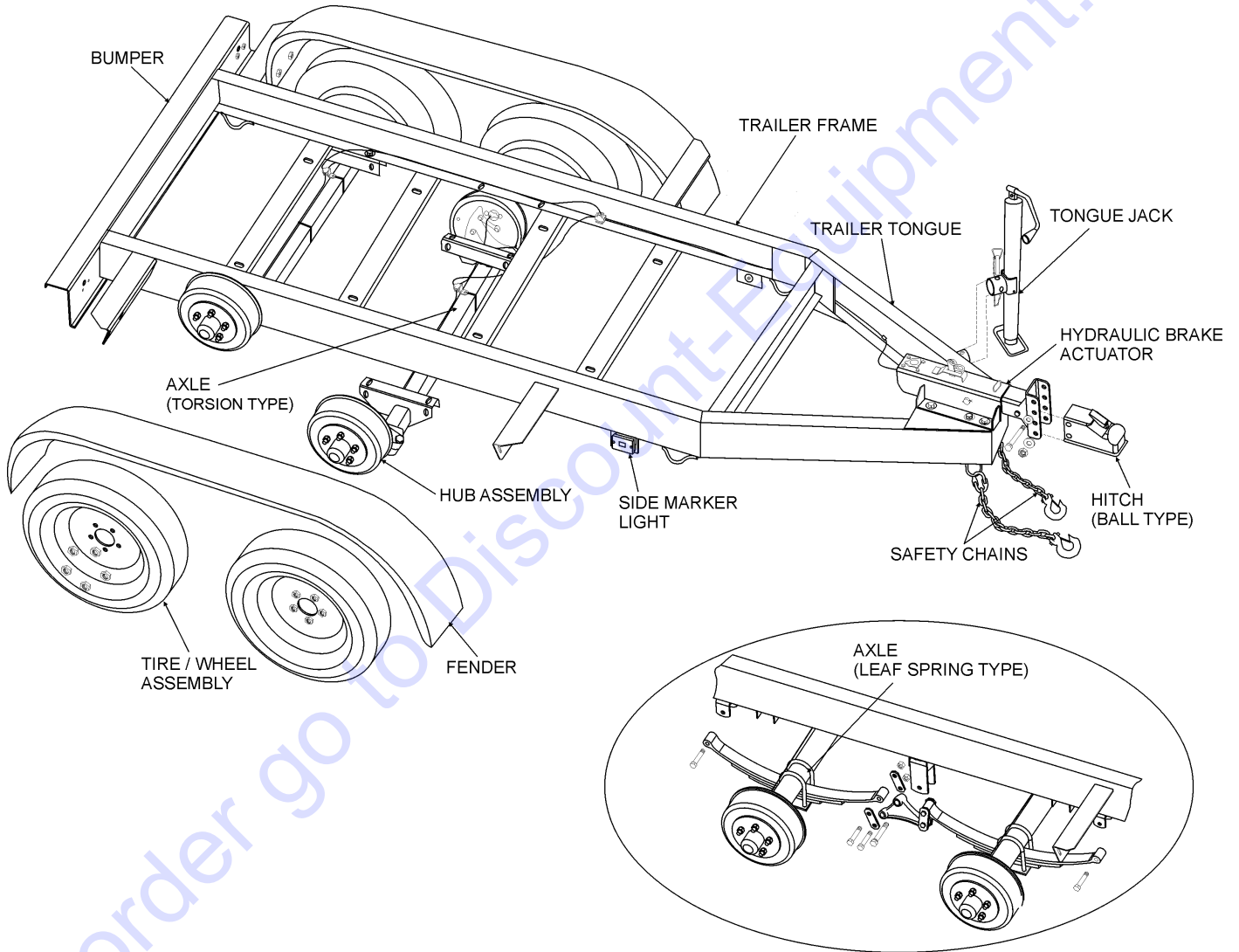


Figure 1. Trailer Components

# SAFETY GUIDELINES

This owner's manual provides general trailer information but cannot cover all of the specific details necessary for the proper combination of every trailer, tow vehicle and hitch. Therefore, you must read, understand and follow the instructions given by the tow vehicle and trailer hitch manufacturers, in addition to the instructions in this manual.

Safety precautions should be followed at all times when operating this equipment. Failure to read, understand and follow the Operating Instructions could result in injury to yourself and others.

## LOSS OF CONTROL

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

- Driving too fast for the conditions (maximum speed when towing a trailer is 60 mph)
- Failure to adjust handling while towing with a trailer
- Trailer not properly coupled to the hitch
- Incorrect use of safety chains
- Incorrect use of breakaway brake
- Mismatch of trailer and hitch
- Unsafe tires, lug nuts or wheels
- Overloading the trailer
- Unsafe load distribution
- Shifting or inappropriate cargo
- Inoperable brakes, lights or mirrors

## Driving Too Fast

Even under ideal road and weather conditions, never drive faster than what is safe. Remember, if you drive too fast, the trailer tires will overheat and possibly blowout. As your speed increases, you are more likely to suddenly lose control. Check for local trailer tow speed limits in your area.

### WARNING

Driving too fast for conditions can result in loss of control and cause death or serious injury. Decrease your speed as road, weather and lighting conditions deteriorate.

## Failure to Adjust Handling While Towing

When towing a trailer, you will have decreased acceleration, increased stopping distance, and increased turning radius (which means you must make wider turns to keep from hitting curbs, vehicles, and anything else that is on the inside corner). In addition, you will need a longer distance to pass, due to slower acceleration and increased length.

- Be alert for slippery conditions. You are more likely to be affected by slippery road surfaces when driving a tow vehicle with a trailer than driving a tow vehicle without a trailer.
- Anticipate the trailer "swaying." Swaying is the trailer reaction to the air pressure wave caused by passing trucks and buses. Continued pulling of the trailer provides a stabilizing force to correct swaying. Do not apply the brakes to correct trailer swaying.
- Check rearview mirrors frequently to observe the trailer and traffic.
- Use lower gear when driving down steep or long grades. Use the engine and transmission as a brake. Do not ride the brakes, as they can overheat and become ineffective.
- Be aware of your trailer height, especially when approaching roofed areas and around trees.

## Trailer Not Properly Coupled to Hitch

It is critical that the trailer be securely coupled to the hitch and that the safety chains are correctly attached.

### WARNING

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

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

# SAFETY GUIDELINES

## Incorrect Use of Safety Chains

Multiquip trailers are equipped with safety chains so control of the trailer can still be maintained even if the trailer comes loose from the hitch. It is important to always connect the safety chains and for maximum effectiveness, ensure they are properly rigged.

### WARNING

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

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

## Incorrect Use of Breakaway Brake

Multiquip trailers are equipped with a breakaway brake system that can apply the brakes on your trailer, if for any reason your trailer comes loose from the hitch. You will have a separate set of instructions for the breakaway brake system. The safety chains and breakaway brake system 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.

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

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

## Mismatch of Trailer and Hitch

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

### DANGER

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

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

## Unsafe Tires, Lug Nuts or Wheels

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

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

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

Improper tire pressure causes an unstable trailer and can result in a tire blowout and loss of control. Therefore, before each tow you must also check the tire pressure. Tire pressure must be checked when tires are cold. Allow 3 hours cool-down after driving as much as 1 mile at 40 mph before checking tire pressure. **NOTE:** Trailer tires will be inflated to higher pressures than passenger vehicle tires.

### WARNING

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

Be sure tires are inflated to pressure indicated on side wall before towing trailer.

# SAFETY GUIDELINES

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

## WARNING

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

Use a torque wrench to tighten the lug nuts. If you do not have a torque wrench, use a lug wrench (from your tow vehicle) and tighten the nuts as much as you can. Then have a service garage or trailer dealer tighten the lug nuts to the proper torque.

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

## WARNING

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

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

## WARNING

Improper lug nut torque can cause a wheel parting from the trailer, leading to death or serious injury. Be sure lug nuts are tight before each tow.

## Overloading The Trailer

The total weight of the load you put in or on the trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR). If you do not know the empty weight of the trailer, you must weigh it at a commercial scale. In addition, you must distribute the load in the trailer such that the load on any tire or axle does not exceed the tire load rating or the Gross Axle Weight Rating (GAWR).

## WARNING

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

Do not load a trailer so that the weight on any tire exceeds its rating. Do not exceed the trailer Gross Vehicle Weight Rating (GVWR) or the axle Gross Axle Weight Rating (GAWR).

## Unsafe Load Distribution

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

A proper weight distribution is equal, right to left. It creates a tongue weight that is in the proper range for stable trailer handling. For tandem and triple axle trailers, it is necessary to know or check that no axle is overloaded.

In Table 1 below, the second column notes the rule-of-thumb percentage of total weight of the trailer plus its cargo (Gross Vehicle Weight or GVW) that should appear on the tongue of the trailer.

For example, a trailer with a Ball Hitch or Bumper Hitch, with a loaded weight of 10,000 pounds, should have approximately 10-15% of 10,000 pounds (equivalent to 1,000 to 1,500 pounds) on the tongue.

**Table 1. Tongue Weight As A Percentage of Loaded Trailer Weight**

Type of Hitch	Percentage
Ball Hitch (or Bumper Hitch)	10% - 15%
Pintle Eye Hitch	10% - 15%
Gooseneck Hitch	20% - 25%
Fifth Wheel Hitch	20% - 25%

## WARNING

Improper tongue weight (load distribution) can result in loss of control of the trailer, leading to death or serious injury. Make certain that tongue weight is within the allowable range. Be sure to:

- Distribute the load front-to-rear to provide proper tongue weight (see Table 1).
- Distribute the load evenly, right and left, to avoid tire overload.
- Keep the center of gravity low.

Towing stability also depends on keeping the center of gravity as low as possible. Load heavy items on the floor, and over the axles, but do not exceed the Gross Axle Weight Rating (GAWR). When loading additional items, be sure to maintain even side-to-side weight distribution and proper tongue weight. Refer to the **LOADING THE TRAILER** section of this manual for additional loading information.

## Shifting Cargo

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

## WARNING

Shifting cargo can result in loss of control of the trailer, and can lead to death or serious injury. Secure all loads with proper sized fasteners, ropes, straps, bolts, etc.

## Inappropriate Cargo

Multiquip trailers are designed for transporting specific cargo. We recommend you carry only that cargo on the trailer. A utility trailer must not be used to carry certain items, such as people, containers of hazardous substances or containers of flammable substances.

## WARNING

Do not transport people on the trailer. The transport of people puts their lives at risk and may be illegal.

## WARNING

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

Exceptions:

- Fuel in the tanks of vehicles that are being towed
- Fuel stored in the tank of an on-board generator

## Inoperable Brakes, Lights Or Mirrors

Be sure that the brakes and all of the lights on your trailer are functioning properly before towing your trailer. Check the trailer taillights by turning on your tow vehicle headlights. Check the trailer brake lights by having someone step on the tow vehicle brake pedal while you look at trailer lights. Do the same thing to check the turn signal lights (see Trailer Wiring Diagram).

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

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

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

# SAFETY GUIDELINES

## HAZARDS FROM MODIFYING YOUR TRAILER

Essential safety items can be damaged by altering your trailer. Simply drilling a hole to secure an attaching bolt can damage an electrical circuit, or other feature of the trailer.

Before making any alteration to your trailer, contact your dealer or Multiquip at 1-800-421-1244 and describe the alteration you are contemplating. Alteration of the trailer structure or modification of mechanical, electrical, plumbing, heating or other systems on your trailer must be performed only by qualified technicians who are familiar with the system as installed on your trailer.

## HAZARDS FROM ACCESSORIES

This section contains some information about certain optional accessories that may be on your trailer. Read and follow all of these instructions before operating the accessories.

### Generators

If your trailer is equipped with a gasoline or diesel generator, you must have and follow the generator manufacturer's instructions.

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

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

<b>⚠ WARNING</b>
<p>Operating gasoline and diesel generators can lead to death or serious injury by:</p> <ul style="list-style-type: none"> <li>• Carbon Monoxide</li> <li>• Fire and Explosion</li> <li>• Electrocution</li> </ul> <p>Do not refuel a running generator or refuel near ignition sources.</p>

## SAFETY WARNING DECALS ON YOUR TRAILER

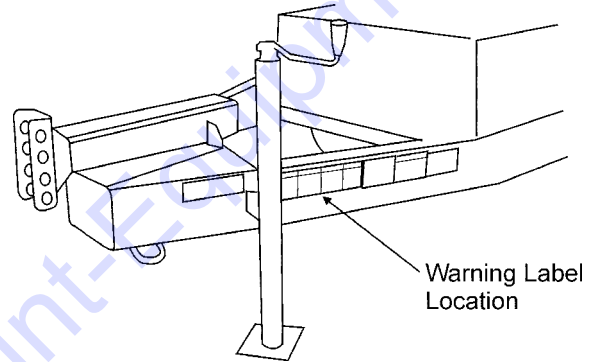


Figure 2. Warning Decals and Locations

To protect you and others against death or serious injury, warning decals (Figure 2) must be on the trailer and must be legible.

If any of these labels are missing or cannot be read, call Multiquip at 1-800-421-1244 for free replacement labels. You will need to provide us with the number shown at the bottom of the decal.

### TRAILER TOWING TIPS

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.

# SAFETY GUIDELINES

Because of the significant differences in all aspects of maneuverability when towing a trailer, the hazards and risks of injury are also much greater than when driving without a trailer. You are responsible for keeping your vehicle and trailer in control, and for all the damage that is caused if you lose control of your vehicle and trailer.

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

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

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

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

Some drivers place their hands at the bottom of the steering wheel, and while the tow vehicle is in reverse, “think” of the hands as being on the top of the wheel. When the hands move to the right (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.

If you are towing a bumper hitch rig, be careful not to allow the trailer to turn too much because it will hit the rear of the tow vehicle. To straighten the rig, either pull forward or turn the steering wheel in the opposite direction.

## TRAILER TOWING GUIDELINES

- Recheck the load tiedowns to make sure the load will not shift during towing.
- Before towing, check coupling, safety chain, safety brake, tires, wheels and lights.
- Check the lug nuts or bolts for tightness.
- Check coupler tightness after towing 50 miles.
- Use your mirrors to verify that you have room to change lanes or pull into traffic.
- Use your turn signals well in advance.
- Allow plenty of stopping space for your trailer and tow vehicle.
- **DO NOT** drive so fast that the trailer begins to sway due to speed.
- Allow plenty of room for passing. A rule of thumb is that the passing distance with a trailer is 4 times the passing distance without the trailer.
- Shift your automatic transmission into a lower gear for city driving.
- **ALWAYS** use lower gears for climbing and descending grades.
- **DO NOT** ride the brakes while descending grades, they may get so hot that they stop working. Then you will potentially have a runaway tow vehicle and trailer.
- To conserve fuel, don't use full throttle to climb a hill. Instead, build speed on the approach.
- Slow down for bumps in the road. Take your foot off the brake when crossing the bump.
- **DO NOT** brake while in a curve unless absolutely necessary. Instead, slow down before you enter the curve and power through the curve. This way, the towing vehicle remains in charge.
- **DO NOT** apply the brakes to correct extreme trailer swaying. Continued pulling of the trailer, and even slight acceleration, will provide a stabilizing force.

## SAFETY GUIDELINES

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- Anticipate the trailer “swaying.” Swaying is the trailer reaction to the air pressure wave caused by passing trucks and buses. Continued pulling of the trailer provides a stabilizing force to correct swaying. **DO NOT** apply the brakes to correct trailer swaying.
- Use lower gear when driving down steep or long grades. Use the engine and transmission as a brake. **DO NOT** ride the brakes, as they can overheat and become ineffective.
- Be aware of your trailer height, especially when approaching roofed areas and around trees.
- Make regular stops, about once each hour. Confirm that:
  - Coupler is secure to the hitch and is locked.
  - Electrical connectors are secure.
  - There is appropriate slack in the safety chains.
  - There is appropriate slack in the breakaway switch pull pin cable.
  - Tires are not visibly low on pressure.
  - The cargo is secure and in good condition.

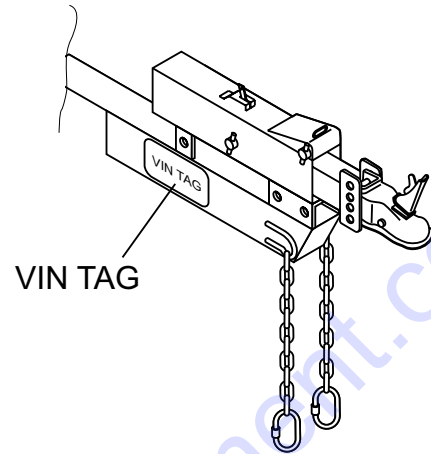


# COUPLING TO THE TOW VEHICLE

Follow all of the safety precautions and instructions in this manual to ensure safety of persons and equipment, and satisfactory life of the trailer. Always use an adequate tow vehicle and hitch. If the vehicle or hitch is not properly selected and matched to the Gross Vehicle Weight Rating (GVWR) of your trailer, you can cause an accident that could lead to death or serious injury.

If you already have a tow vehicle, know your vehicle tow rating and make certain the trailer's rated capacity is less than or equal to the tow vehicle's rated towing capacity. If you already have (or plan to buy) a trailer, make certain that the tow rating of the tow vehicle is equal to or greater than that of the trailer.

The trailer VIN tag contains the critical safety information for the use of your trailer.



**Figure 4. VIN Tag Location**

The trailer VIN tag contains the following critical safety information for your trailer.

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

**GVWR:** The maximum allowable gross weight of the trailer and its contents. The gross weight of the trailer includes the weight of the trailer and all of the items within it. GVWR is sometimes referred to as GTWR (Gross Trailer Weight Rating), or MGTW (Maximum Gross Trailer Weight). GVWR, GTWR and MGTW are all the same rating.

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

**PSIC:** The tire pressure (psi) measured when cold.

**VIN:** The Vehicle Identification Number.

**EMPTY WEIGHT:** Some information that comes with the trailer (such as the Manufacturer's Statement of Origin) is not a reliable source for "empty" or "net" weight. The shipping documents list average or standard weights and your trailer may be equipped with options. xxcvcv

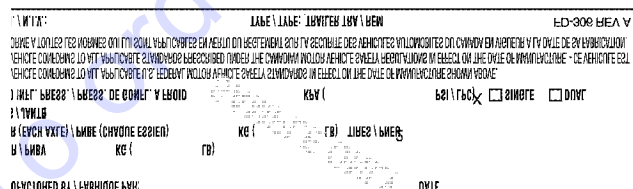
**⚠ WARNING**

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

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

## TRAILER VIN TAG

Figure 3 below is a sample of the Vehicle Identification Number (VIN) Tag which is typically located on the left front of the trailer. See Figure 4 for location.



**Figure 3. Vehicle VIN Tag**

# COUPLING TO THE TOW VEHICLE

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To determine the “empty” or “net” weight of your trailer, weigh it on an axle scale. To find the weight of the trailer using an axle scale, you must know the axle weights of your tow vehicle without the trailer coupled. Some of the trailer weight will be transferred from the trailer to the tow vehicle axles, and an axle scale weighs all axles, including the tow vehicle axles.

## TOW VEHICLE

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

### Overall Carrying and Towing Capacity of Vehicle

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

### Towing Hitch

The towing hitch attached to your tow vehicle must have a capacity equal to or greater than the load rating of the trailer you intend to tow. The hitch capacity must also be matched to the tow vehicle capacity. Your vehicle dealer can provide and install the proper hitch on your tow vehicle.

### Suspension System

Sway bars, shock absorbers, heavy duty springs, heavy duty tires and other suspension components may be required to sufficiently tow the trailer and pump.

### Brake Controller

For trailers equipped with electric brakes, the electric brake controller is part of the tow vehicle and is essential in the operation of the electric brakes on the trailer. The brake controller is not the same as the safety breakaway brake system that may be equipped on the trailer.

### Side View Mirrors

The size of the trailer that is being towed and your state law regulations determine the size of the mirrors. However, some states prohibit extended mirrors on a tow vehicle,

except while a trailer is actually being towed. In this situation, detachable extended mirrors are necessary. Check with your dealer or the appropriate state agency for mirror requirements.

### Heavy Duty Flasher

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

### Electrical Connector

An Electrical connector connects the light and brake systems on the trailer to the light and brake controls on the towing vehicle.

### Heavy Duty Engine Oil Cooling System

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

### Automatic Transmission Oil Cooler

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

### Fire Extinguisher

Multiquip recommends maintaining access to a fire extinguisher at all times.

### Emergency Flares and Triangle Reflectors

It is wise to carry these warning devices even if you are not towing a trailer. It is particularly important to have these when towing a trailer because the hazard flashers of your towing vehicle will not operate for as long a period of time when the battery is running both the trailer lights and tow vehicle lights.

# COUPLING TO THE TOW VEHICLE

## TRAILER

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

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

### Coupler

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

### Hitch

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

### Safety Chains

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

### Trailer Lighting and Braking Connector

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

### Breakaway System

If the trailer coupler connection comes loose, the breakaway system can actuate emergency hydraulic brakes depending on the type of actuator on the trailer. The breakaway cable must be rigged to the tow vehicle with appropriate slack that will activate the system if the coupler connection comes loose.

### Jackstand

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

Some trailers are equipped with swivel-type tongue jacks. Swivel type tongue jacks are attached to the trailer frame one to two feet behind the trailers coupler. Once the coupler and hitch are secured, the jack can be swiveled parallel to

the trailer frame away from the roadway. This is achieved by disengaging the pull pin located on the shaft that attaches the jack to the trailer frame. Replace the pin once the jack is in the desired position (Figure 5).

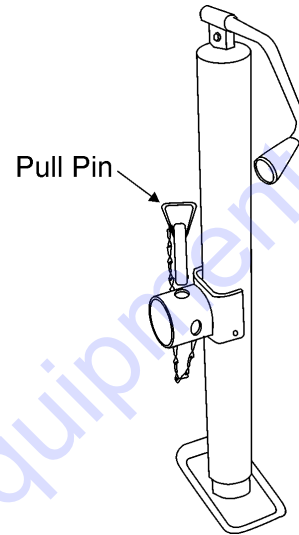


Figure 5. Swivel Tongue Jack

### WARNING

**NEVER** position any part of your body underneath a trailer being supported by the tongue jack. Serious injury or death could occur if the jack should fail to support the load. **NEVER** exceed maximum rated capacity.

### WARNING

Before using the swivel jack, make certain the pull pin is fully inserted through both sides of the inner tube and the trailer mount.

When operating the jack or coupling tow vehicle to trailer, always secure the wheels of the trailer and tow vehicle to prevent rolling.

## COUPLER TYPES

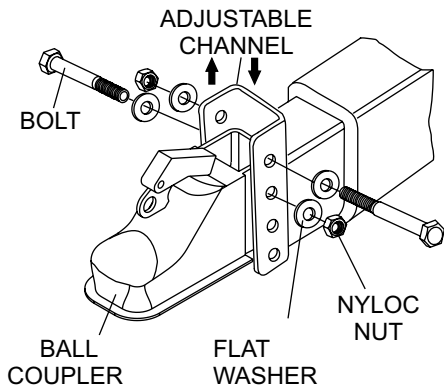
Trailers are produced with a variety of coupler devices.

- Ball Coupler
- Pintel-Eye Coupler
- Fifth Wheel Kingpin

# COUPLING TO THE TOW VEHICLE

## Ball Coupler

A ball coupler (Figure 6) connects to a ball hitch that is located on or under the rear bumper of tow vehicle. This system of coupling a trailer to a tow vehicle is sometimes referred to as “bumper pull.”

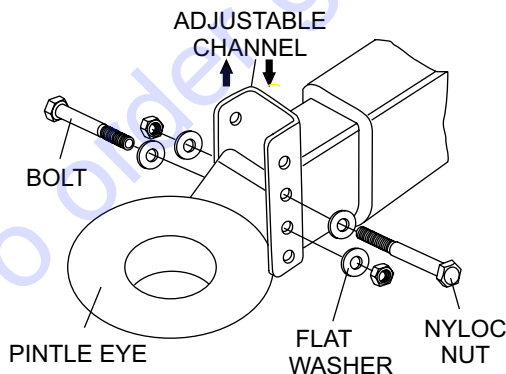


**Figure 6. Ball Coupler**  
(Shown with Adjustable Channel)

When so equipped, Multiquip has utilized a ball 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 for your tow vehicle where the load rating of the hitch is equal to or greater than that of your trailer. Also, the hitch ball size must be the same as the coupler size.

## Pintle-Eye Coupler

A pintle eye coupler (Figure 7) connects to a pintle-hook hitch that is located on or under the rear bumper of tow vehicle. This system of coupling a trailer to a tow vehicle is sometimes referred to as a “lunette eye, tow ring or G.I. hitch.”

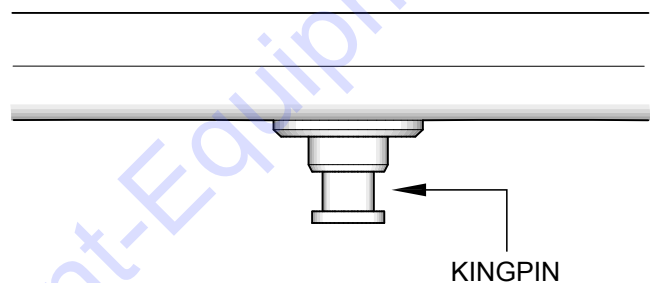


**Figure 7. Pintle-Eye Coupler**  
(Shown with Adjustable Channel)

Use a pintle-eye coupler that is suitable for the size and weight of the trailer. The load rating of the coupler and the necessary pintle hitch size are listed on the trailer tongue. You must provide a pintle-hook hitch for your tow vehicle, where the load rating of the pintle-hook hitch and pintle-eye coupler is equal to or greater than that of your trailer. Also, the hitch size must be the same as the coupler size.

## Fifth-Wheel Kingpin

A kingpin on the trailer (Figure 8) connects to a fifth wheel installed in the bed of the tow vehicle. This system of coupling a trailer to a tow vehicle has a greater tongue weight capacity than a ball coupler.



**Figure 8. Fifth Wheel Kingpin**

Use a fifth wheel kingpin that is suitable for the size and weight of the trailer. The kingpin must match the fifth wheel, and rated for the Gross Vehicle Weight Rating (GVWR) of your trailer.

## COUPLING TRAILER TO TOW VEHICLE (Ball and Pintle-Eye Couplers)

- Make sure that the hitch is the same size as the coupler. Couplers are marked with their size and rating.

### NOTICE

**THE TOW VEHICLE AND HITCH MUST HAVE A RATED TOWING CAPACITY EQUAL TO OR GREATER THAN THE TRAILER GROSS VEHICLE WEIGHT RATING (GVWR).**

### WARNING

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

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

# COUPLING TO THE TOW VEHICLE

## **WARNING**

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

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

Replace worn or damaged hitch.

- Wipe the inside and outside of the coupler clean and inspect it visually for cracks and deformations; feel the inside of the coupler for worn spots and pits.
- Be sure the coupler is tight to the tongue of the trailer. All coupler fasteners must be visibly solid against the trailer frame.

## **WARNING**

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

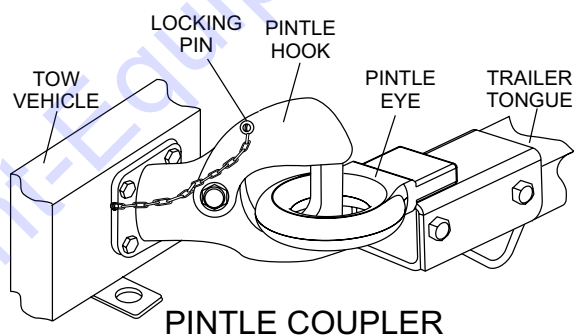
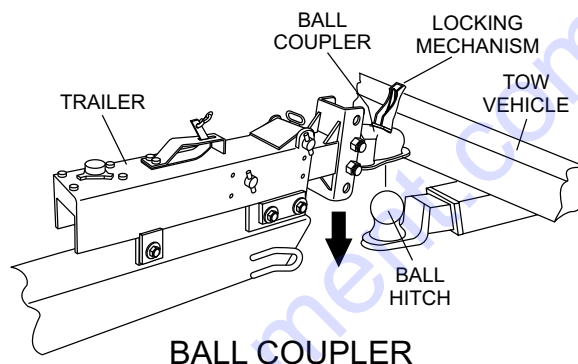
- Raise the bottom surface of the coupler to be above the top of the hitch. Use the tongue jack to support the trailer tongue. Wood or concrete blocks may also be used.

## Preparing the Coupler and Hitch

- Lubricate the hitch ball and the inside of coupler with a thin layer of automotive bearing grease (ball coupler only).
- The trailer may be fitted with a tongue jack that can raise and lower the coupler. The tongue jack is mounted to the A-frame (front, or tongue) part of the trailer and raises the tongue of the trailer. Raise the coupler above the top of the hitch by rotating the jack handle clockwise.
- Open the coupler locking mechanism. Couplers have a locking mechanism with an internal moving piece and an outside handle.
- In the open position, the coupler is able to drop fully onto the hitch. See the coupler manufacturer instructions for details of placing the coupler in the “open” position.
- Slowly back up the tow vehicle so that the hitch is near or aligned under the coupler if the trailer jack has raised the coupler.

## Trailer Coupler To Tow Vehicle Hitch

If your trailer does not have a jack, you will have to lift the coupler and place it over the hitch (Figure 9).



**Figure 9. Hitch Coupling Mechanism**

- If you have a jack, lower the trailer until the coupler fully engages the hitch. If the coupler does not line up with the hitch, adjust the position of the tow vehicle.
- Engage the coupler locking mechanism. In the engaged position, the locking mechanism securely holds the coupler to the hitch.
- Insert a pin or lock through the hole in the locking mechanism.
- Be sure the coupler is all the way on the hitch 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 jackstand, verify that you can raise the rear of the tow vehicle by one inch after the coupler is locked to the hitch.

## **NOTICE**

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

# COUPLING TO THE TOW VEHICLE

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

## Attaching Safety Chains

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

- Attach the safety chains so that they:
  - cross underneath the coupler (see Figure 10).
  - loop around a frame member of the tow vehicle or to holes provided in the hitch system (but, do not attach them to an interchangeable part of the hitch assembly).
  - have enough slack to permit tight turns, but not be close to the road surface, so if the trailer uncouples, the safety chains can hold the tongue up above the road.

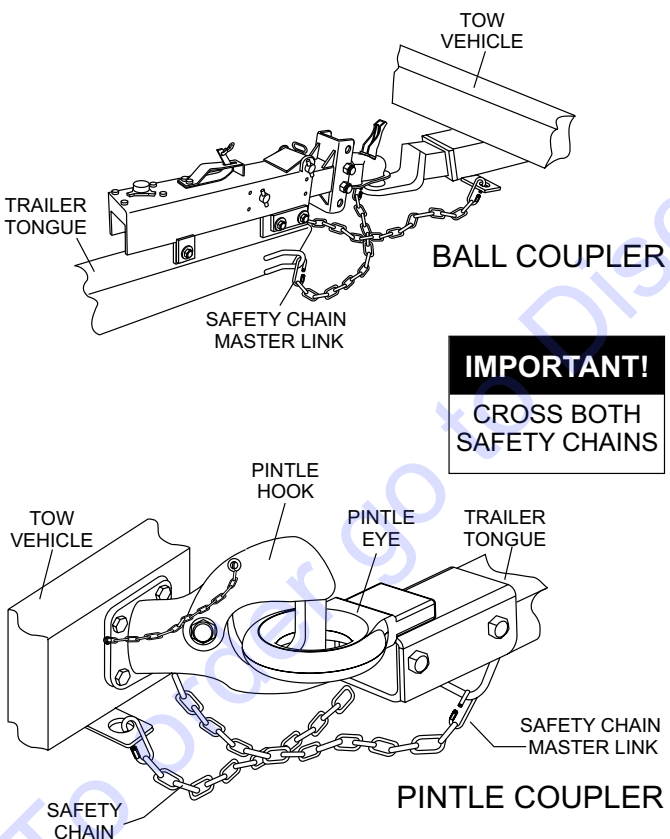


Figure 10. Safety Chain Attachment

## WARNING

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

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

## Breakaway Brake System

If the coupler or hitch fails, a properly connected and working breakaway brake system will apply the hydraulic and/or electric brakes on the trailer (Figure 11). The safety chains will keep the tow vehicle attached and as the brakes are applied at the trailer's axles, the trailer/tow vehicle combination will come to a controlled stop.

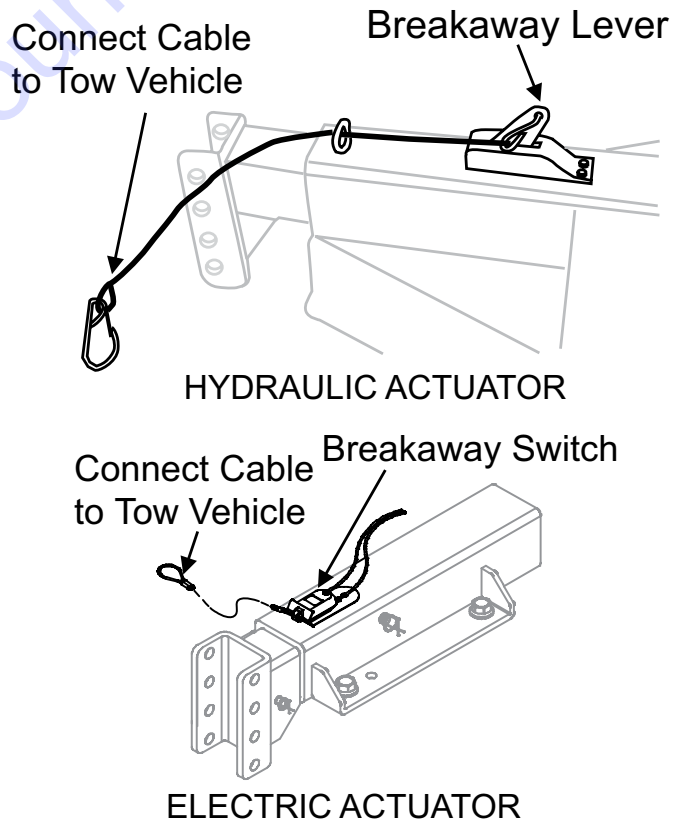


Figure 11. Breakaway Brake Systems

# COUPLING TO THE TOW VEHICLE

For hydraulic brake equipped trailers, the breakaway brake system includes a brake cable connected to the tow vehicle on one end and to the emergency brake lever located on the hydraulic actuator on the other end. Read and follow the instructions in this manual as well as the instructions by the hydraulic actuator manufacturer.

For electric brake equipped trailers, the breakaway brake system includes a DC power source, a switch with a pull pin, and a breakaway brake controller. You must periodically charge the battery to keep the breakaway brake system in working order. Read and follow the instructions in this manual as well as the instructions by the breakaway brake controller manufacturer.

- Connect the pull pin cable to the tow vehicle so that the pull pin will be pulled out before all of the slack in the safety chains is taken up. Do not connect the pull pin cable to a safety chain or to the hitch assembly. This would keep the breakaway brake system from operating when it is needed.
- Remove the pull pin from the switch and test tow the trailer at less than 5 mph. 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 are repaired.
- Immediately replace the pull pin. The breakaway brake system 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 or hitch fails.

## NOTICE

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 will prevent brakes from working, 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, you must charge the generator battery every month.
- Replace the breakaway brake battery at intervals specified by manufacturer.

## Connecting the Electrical Cables

Connect the trailer lights to the tow vehicle's electrical system using the electrical connectors. Refer to Wiring Diagram.

1. Check all lights for proper operation:
  - a. Clearance and Running Lights (Turn on tow vehicle headlights).
  - b. Brake Lights (Step on tow vehicle brake pedal).
  - c. Turn Signals (Operate tow vehicle directional signal lever).
  - d. Backup Lights (Put tow vehicle gear shift into reverse).
2. Check electric brakes for proper operation. If your trailer has electric brakes, your tow vehicle will have an electric brake controller that sends power to the trailer brakes.

Before towing the trailer on the road, you must operate the brake controller while trying to pull the trailer in order to confirm that the electric brakes operate.

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

## WARNING

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

## Uncoupling Hitch with Tongue Jack

1. Block trailer tires to prevent the trailer from rolling, before jacking the trailer up.
2. Disconnect the electrical connector.
3. Disconnect the breakaway brake switch cable. Promptly replace the pull pin in the switchbox.

# COUPLING TO THE TOW VEHICLE

4. Disconnect the safety chains from the 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 the jack handle (or crank) clockwise. This will slowly extend the jack and transfer the weight of the trailer tongue to the jack.

## COUPLING TRAILER TO TOW VEHICLE (Fifth Wheel Coupler)

- Be sure the size and rating of the fifth wheel and king pin match.
- Wipe the kingpin clean and inspect it visually and by feel for flat spots, cracks and pits. Check the condition of the kingpin mounting in the bed of the tow vehicle.

### **WARNING**

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

- Be sure the fifth wheel and kingpin are tightly fastened and any welds are solid.

### **WARNING**

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

- Be sure the fifth wheel mechanism operates freely.

## Preparing the Fifth Wheel Kingpin

1. Lubricate the fifth wheel plate surface on the towing vehicle with a light coat of lithium-base, waterproof grease.
2. Be sure the brake line, electrical line, and any other lines are clear of the coupling area.
3. Be sure the release lever on the tow vehicle is in the open position.
4. Back tow vehicle up close to the trailer, centering the kingpin in the slot of the fifth wheel.
5. **STOP** before engaging the coupling.

### **WARNING**

There must be no one under the trailer before or during the coupling operation. If the trailer drops during coupling, death or serious injury may result.

## Trailer Kingpin To Tow Vehicle Fifth Wheel

1. Slowly back up the 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 (Figure 12).

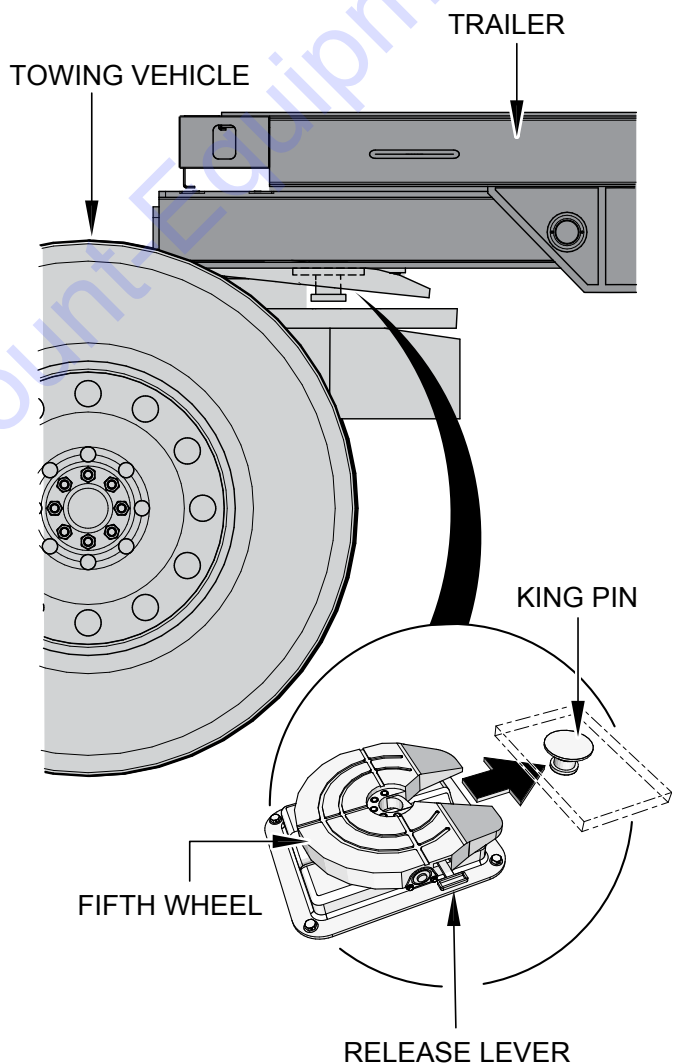


Figure 12. Trailer Kingpin to Tow Vehicle Fifth Wheel



# COUPLING TO THE TOW VEHICLE

2. Visually check that the release lever is engaged (locked).
3. Attempt to pull forward as an initial test of the locking of the release lever.

## Raise the Drop-Leg Jack

A trailer having a fifth wheel kingpin will be outfitted with one or two drop leg jacks to support the trailer. Because we use several drop leg jack mechanisms, the general instructions below may vary slightly from the jack manufacturer's instructions.

1. Rotate the jack handle counterclockwise (Figure 13). This will slowly retract the jack and transfer the weight of the trailer to the towing vehicle. Continue retracting the jack to its fully-retracted position.

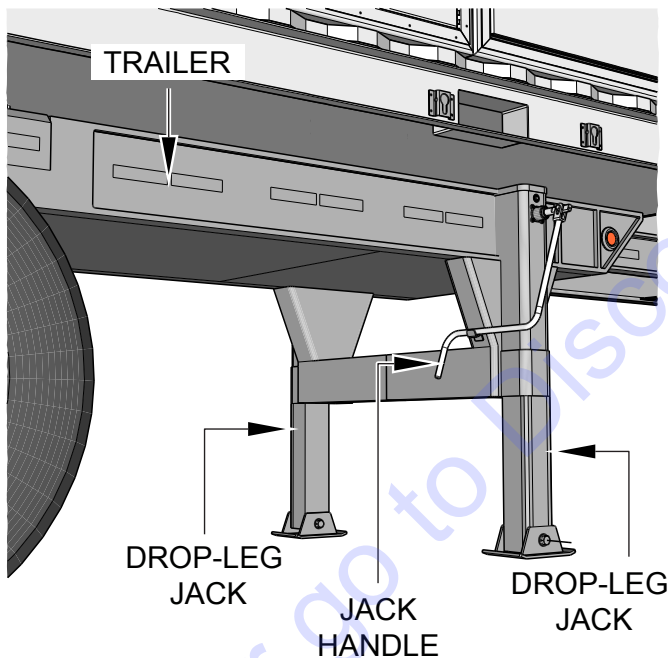


Figure 13. Drop-Leg Jack

## Breakaway Brake System

If the kingpin gets disconnected, a properly connected and working breakaway brake system will apply brakes on the trailer.

## Connecting the Electrical Cables

Connect the trailer lights to the tow vehicle's electrical system using the electrical connectors. Refer to Wiring Diagram.

1. Check all lights for proper operation:
  - a. Clearance and Running Lights (Turn on tow vehicle headlights).
  - b. Brake Lights (Step on tow vehicle brake pedal).
  - c. Turn Signals (Operate tow vehicle directional signal lever).
  - d. Backup Lights (Put tow vehicle gear shift into reverse).

## Uncoupling Fifth-Wheel

Follow these steps to uncouple fifth wheel kingpin from the tow vehicle:

1. Block trailer tires to prevent the trailer from rolling.
2. Make certain that ground surface below the jack base will support trailer load.
3. Rotate the handle (or crank) clockwise to slowly extend the jack to the ground and transfer the weight of the trailer to the jack.
4. If your trailer has two drop leg jacks, lower them both to the ground.

### NOTICE

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

5. Unlock the release lever on the fifth wheel:
6. Slowly drive the tow vehicle away from the trailer.

# COUPLING TO THE TOW VEHICLE

## PROPER LEVEL OF TRAILER

When coupling the trailer to the towing vehicle, make sure that the trailer is level with the towing vehicle (Figure 14). Use a drop hitch if necessary. This will prevent stress on the trailer frame which could cause damage.

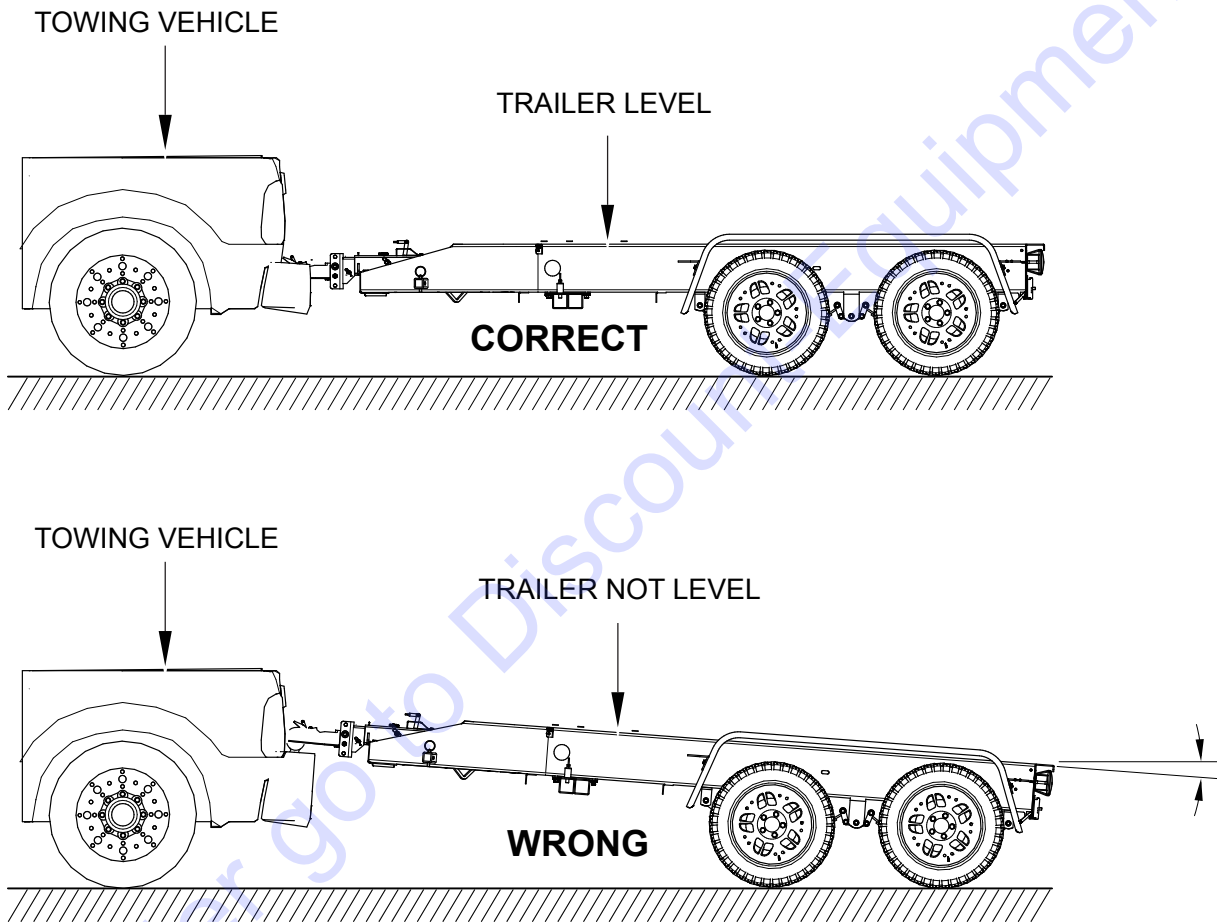


Figure 14. Trailer Level

# LOADING THE TRAILER

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

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

To determine that you have loaded the trailer within its rating, you must consider the distribution of weight, as well as the total weight of the trailer and its contents. The trailer axles carry most of the total weight of the trailer and its contents (Gross Vehicle Weight, or “GVW”). The remainder of the total weight is carried by the tow vehicle hitch. It is essential for safe towing that the trailer tongue and tow vehicle hitch carry the proper amount of the loaded trailer weight, otherwise the trailer can suddenly sway wildly at towing speed.

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

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

## WARNING

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

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

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

## 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, 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 suddenly become unstable at high speeds.

If, on the other hand, there is too much tongue weight, the front wheels of the tow vehicle can be too lightly loaded and cause loss of steering control and traction, as well, if the front wheels are driving.

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

Table 1 shows “rules of thumb” for determining proper tongue weight.

## WARNING

Improper tongue weight (load distribution) can result in loss of control of the trailer, leading to death or serious injury. Make certain that tongue weight is within the allowable range.

Be sure to:

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

# LOADING THE TRAILER

## 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. If you know the weight on your tow vehicle axles when you are not towing a trailer, trailer tongue weight can be determined with the use of a truck axle scale.

The recommended method of checking tongue weight is to use an accessory called a “tongue weight scale.” The tongue weight can also be checked at a public scale.

## SECURING THE CARGO

Since the trailer “ride” can be bumpy and rough, you must check your cargo so that it does not shift while the trailer is being towed. All generator assemblies should be securely bolted to the trailer frame. Make sure service doors on the generator housing assembly are latched and locked, to prevent them from blowing open during transit. Avoid stacking or storing loose items on the trailer. Store any unsecured items in the tow vehicle.

### **WARNING**

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

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

## PRE-TOW CHECKLIST

Before towing, double-check all of these items:

- Tires, wheels and lug nuts
- Coupler secured and locked
- Safety chains properly rigged to tow vehicle, not to hitch.
- Test lights: Tail, Stop, Turn and Backup
- Safety breakaway switch cable fastened to tow vehicle, not to safety chains
- Cargo properly loaded, balanced and tied down
- Tongue weight
- Doors latched and secured
- 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
- Doors latched and secured

## TRANSPORTING A TRAILER

When transporting a trailer on a flatbed, secure chains to the tie-down points on the trailer and then connect to the flatbed. Make sure they are just tight enough to keep the trailer from moving (Figure 15). **DO NOT OVERTIGHTEN.** Overtightening will stress and compress the axles and cause possible damage.

### NOTICE

Never tie the chains to any part of the axle to secure the trailer. Possible damage may occur.

### NOTICE

Ensure trailer is level during transport.

### NOTICE

Figure 15 shows a typical generator mounted on the trailer. Other equipment may be mounted.

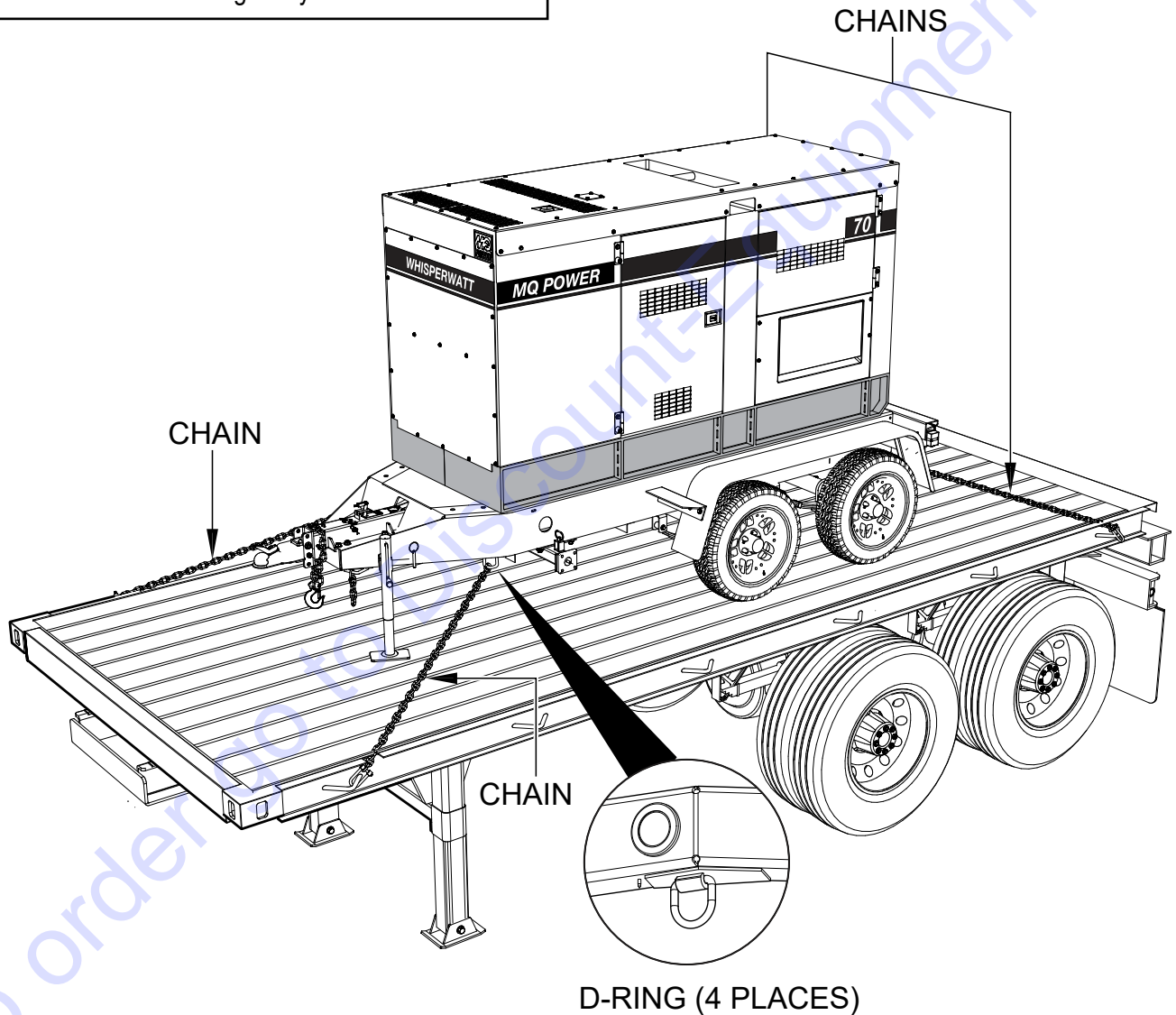


Figure 15. Transporting a Trailer on a Flatbed

# BREAKING IN A NEW TRAILER

## RETIGHTEN LUG NUTS (at First 10, 25 & 50 Miles)

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

### WARNING

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

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

## ADJUST BRAKE SHOES AT FIRST 200 MILES

Brake shoes and drums experience a rapid initial wear. The brakes must be adjusted after the first 200 miles of use, and each 3,000 miles thereafter. Some axles are fitted with a mechanism that will automatically adjust the brake shoes when the trailer is "hard braked" from a forward direction. Read your axle and brake manual to see if your brakes adjust automatically.

A hard stop is used to:

- confirm that the brakes work
- confirm that the trailer brakes are properly synchronized with the tow vehicle brakes; and for many braking systems automatically adjust the brake shoes

If your trailer is not fitted with automatically adjusting brakes, the brakes will need to be manually adjusted.

## SYNCHRONIZING THE BRAKE SYSTEMS (ELECTRIC BRAKES)

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.

Common causes of improper brake synchronization are:

- Different trailer loads
- Adverse weather and road conditions
- Uneven current flow from tow vehicles electric system
- Improper trailer brake adjustment

### 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 mph before each tow.

To obtain proper brake synchronization, drive your tow vehicle 15 to 20 mph and make a few sudden stops on a clean, gravel free paved road. Adjust your brake controller so that you trailer brakes are at a point of impending lock-up but not fully locked. Follow you brake controller's instructions for proper procedures for controller adjustment. Proper brake synchronization is achieved when there is no jerking or pushing from the trailer.

All brakes should work in harmony. If you are experiencing a wheel lock-up adjust all the brakes to work the same. Example: Adjust all other brakes up to have multiple wheel lock-up, then turn down your brake controller to achieve impending brake lock-up.

**DO NOT OVER-ADJUST THE BRAKES.** This may cause premature shoe wear. Depending on your brakes, tire assemblies and trailer load, not all trailer brakes may achieve lock-up. Brake lock-up constitutes longer stopping distances and poor trailer control, therefore it must be avoided.

To insure safe brake performance and synchronization, read and follow the axle/brake and the brake controller manufacturer instructions.

This section provides some basic information for the safe operation of several accessories. For many accessories, such as generators, the manufacturer of the accessory has also provided instructions. You must read and follow these instructions before using the accessory. The following accessories are described in this section:

- Diesel and Gasoline (or LP) Generators
- Vending or Accessory Doors
- Electric-powered Landing Gear

Many accessories introduce the risk of fire. If you have an accessory on your trailer, make sure you have a fire extinguisher charged and ready before operating the accessory. Check the fire extinguisher at least once a month. If the fire extinguisher is discharged even partially, it must be recharged. Follow the fire extinguisher manufacturer instructions for recharging the extinguisher after use.

## DIESEL AND GASOLINE FUELED GENERATORS

If your trailer is equipped with a generator, you must read and follow the generator manufacturer instructions.

Carbon monoxide gas is present in the exhaust of all gasoline and diesel engines. Carbon monoxide is an odorless gas that can cause death. Be certain exhaust from any running engine or burning fuels cannot accumulate in areas where people or animals are likely to be present. Conditions that can redirect exhaust fumes are, for example:

- Being drawn in by fans or ventilators
- Prevailing wind
- Being trapped between adjacent trailers, vehicles or buildings
- Being trapped between or in a snow bank or other materials that can redirect fumes.

### WARNING

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

- Carbon Monoxide
- Fire and Explosion
- Electrocution

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

Before starting the generator, read the generator instruction manual.

Check fuels and oil levels.

Never exceed the capacity of the generator.

Before turning off the generator, remove the electrical load and let the engine to run for two or three minutes to cool the generator.

## VENDING AND ACCESSORY DOORS

A vending or accessory door opens vertically and has a hinge along its top edge. These heavy doors are sometimes equipped with spring-assisted lifting, usually with a device known as a “gas strut”. The gas strut lifting device is not designed to hold a vending door up. You must use the provided solid “prop rods” to hold a vending door in the open position.

### WARNING

Gas springs lose their lifting capability with age and cold weather; and can cause the door to fall, resulting in injury.

Always hold the door open until the prop rods are in place.

Always use prop rods to hold vending or accessory doors open.

Be prepared to hold the weight of the door when removing the prop rod.

## MAINTENANCE

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

**Table 2. Inspection and Service Before Each Use**

ITEM	INSPECTION/SERVICE
Breakaway Brakes Hydraulic Electric	Check Fluid Level. Check Operation.
Breakaway Brakes	Check if Fully Charged, Connections Clean.
Brakes (All Types)	Check Operation.
Shoes and Drums	Adjust.
Coupler and Hitch Ball	Check for cracks, pits and flats. Replace w/ball & coupler having trailer GVW rating. Grease. Check locking device & replace when worn.
Pintle Eye Hitch	Check for cracks, pits and flats. Replace with hitch and coupler having trailer GVW rating. Grease. Check locking device & replace when worn.
Fifth Wheel & Kingpin	Check for cracks, pits and flats. Replace with hitch and coupler having trailer GVW rating. Grease. Check locking device and replace when worn.
Safety Chains and Hooks	Check for wear and damage.
Tires	Check tire pressure when cold. Inflate as needed.
Wheels - Lug Nuts (Bolts) and Hub	Check for tightness. Tighten. For new and remounted wheels, check torque after first 10, 25 and 50 miles of driving and after any impact.

**Table 3. Inspection and Service Every 6 Months or 6,000 Miles**

ITEM	INSPECTION/SERVICE
Tires	Rotate @ 5,000 miles. Inspect tread and sidewalls thoroughly. Replace tire when treads are worn, when sidewall has a bulge, or sidewall is worn.
Brakes, Electric Magnets Controller (in tow vehicle)	Check wear and current draw. Check power output (amperage) and modulation.



**Table 4. Inspection and Service Each Year or 12,000 Miles**

<b>ITEM</b>	<b>INSPECTION/SERVICE</b>
Hydraulic Hydraulic Electric Brake Adapter	Check fluid levels. Check for loose or damaged fasteners.
Brakes, All Types Shoes and Drums	Check for scoring and wear. Replace per manufacturer's specifications.
Jack, Drop-leg	Grease gears at top.
Structure Frame members Welds	Inspect all frame members, bolts and rivets. Repair or replace damaged, worn or broken parts. Inspect all welds. Repair as needed.
Wheels Sealed Bearings (Hubs) Unsealed Bearings (Hubs) Rims	Check and confirm free running. Replace if not (sealed bearings are not serviceable.) Disassemble/ inspect/ assemble and repack. Replace promptly if immersed in water. Inspect for cracks & dents. Replace as needed.
Structure Axle attachment bolts	Check for wear and damage. Check by dealer.

# MAINTENANCE

## AXLE BOLTS, FRAME, SUSPENSION AND STRUCTURE

To perform many of the inspection and maintenance activities, you must jack up the trailer using jacks and jack stands. When jacking and using jack stands, place them so as to clear wiring, brake lines, and suspension parts (i.e., springs, torsion bars). Place jacks and jack stands inside of the perimeter strip on the supporting structure to which the axles are attached.

### WARNING

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

## Trailer Structure

Because the trailer receives the most abuse, it will most likely corrode before any other part of the structure. Using a power washer and a detergent solution, thoroughly wash the trailer to remove road grime, bugs, salt or mud. Be sure to take time to check all electrical connections including lights and the brakes, if your trailer is equipped with an electric brake system. Inspect the trailer license plate and make sure it is clean and legible.

## Welds

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

### WARNING

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

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

## Fasteners

Various fastener types may be used on your trailer.

Fasteners provide certain advantages over welded connections in some cases, however, it is important to periodically inspect all of the fasteners to insure proper maintenance of the trailer.

### WARNING

Damaged, loose or missing fasteners will weaken the trailers structure and can cause serious injury and damage to the trailer and contents. Tighten loose fasteners to their proper torque setting.



## Tightening Loose Fasteners

When tightening loose fasteners, it is important that they be tightened to their proper torque setting (See Table 5). Under tightening may cause them to loosen or disengage during use of the trailer. Over tightening may damage the fasteners and their components causing them to fail or break.

### NOTICE

**NEVER** use an pneumatic air gun to tighten fasteners. Always use a properly calibrated torque wrench.

**Table 5. Fastener Types and Strength Grades**

Strength Grade Markings		
Definition	6 Radial Lines SAE Grade 8 ASTM A-354BD	Lawson TRU-TORQ®
Material	Medium Carbon Alloy Steel Quenched & Tempered	Special Analysis Alloy Steel Quenched & Tempered
Proof Load Strength Psi	120,000 psi min.	150,000 psi min.
Single Shear Strength Psi	97,000 psi	117,000 psi
Ultimate Tensile Strength Psi	150,000 psi min.	180,000 psi min. 190,000 psi avg.
Torque Requirements	130 (ft lbs.)	140 (ft lbs.)
Fastener Size		
Coupler	5/8" - 11	N/A
W/ Nylon Insert Locknut	5/8" - 11	N/A
Torsion Axle	N/A	5/8" - 18
W/ Grade C All Metal Locknut	N/A	5/8" - 18
Hydraulic Actuator & Electric Brake Adapter	N/A	5/8" - 18
W/ Grade C All Metal Locknut	N/A	5/8" - 18

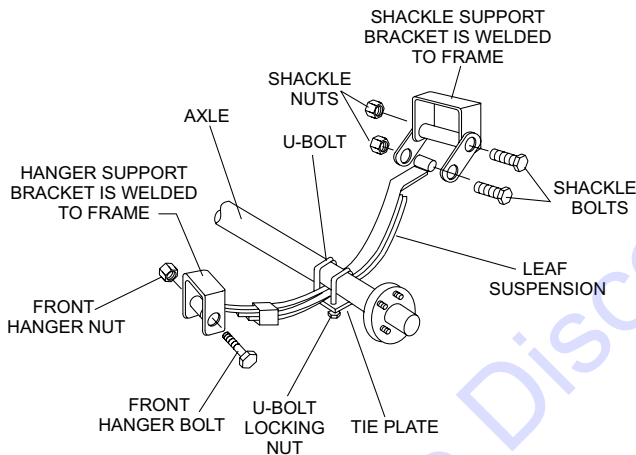
## Replacing Fasteners

Should any of the fasteners become damaged, lost or corroded, it is important to replace them with fasteners of the same size and strength grade (or better) as the originals. Be sure that the fastener components (capscrew, washer and nut) are all of the same strength grade.

## Suspension

### Leaf Suspension

The leaf suspension springs and associated components (Figure 16) should be visually inspected every 6,000 miles for signs of road damage, excessive wear, elongation of bolt holes, and loosening of fasteners. Replace all damaged suspension parts immediately. Torqued suspension components as detailed in Table 6.



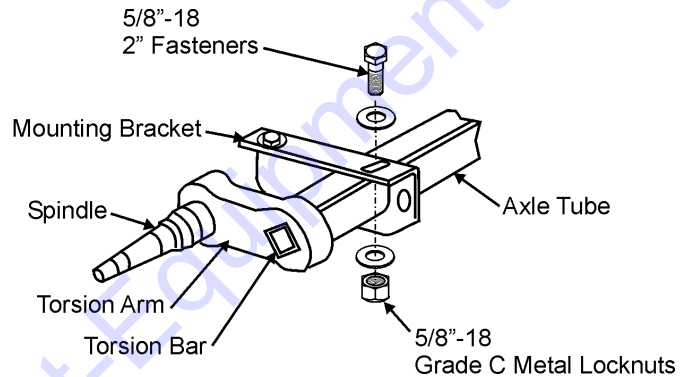
**Figure 16. Leaf Suspension Components**

**Table 6. Fastener Types and Strength Grades**

ITEM	TORQUE (Ft.-Lbs)
3/8" U-bolt	Min-30 Max-35
7/16" U-bolt	Min-45 Max-60
1/2" U-bolt	Min-45 Max-60
Equalizer Bolts	Snug fit only. Parts must rotate freely. Locking nuts are provided to retain nut-bolt assembly.
Shoulder Type Shackle Bolt	

### Torsion Suspension

With torsion systems, the suspension takes place inside the square tube which is filled with highly resilient rubber. The mounting bracket of the torsion assembly is bolted directly to the trailer frame. (See Figure 17 below). Except for periodic inspection of the bracket's fasteners to the vehicle frame, no other suspension maintenance is required on the axles.



**Figure 17. Torsion Suspension Components**

### WARNING

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

Have trailer professionally inspected annually and after any impact.

## TRAILER BRAKES

Properly functioning brake shoes and drums are essential to ensure safety. The brakes should be inspected the first 200 miles of operation. This will allow the brake shoes and drums to seat properly. After the first 200 mile interval, inspect the brakes every 3,000 miles. If driving over rough terrain, inspect the brakes more frequently.

## MANUALLY ADJUSTING THE BRAKES

Most axles are fitted with a brake mechanism that will adjust the brakes during a hard stop. However, some braking systems are not automatically adjusted by hard stopping. These brakes require manual adjustment. The following steps apply to adjust most manually adjustable brakes.

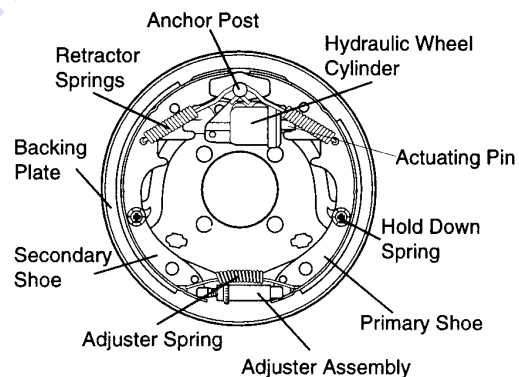
1. Jack up the trailer and secure it on adequate capacity jackstands.
2. Be sure the wheel and brake drum rotate freely.
3. Remove the adjusting-hole cover from the adjusting slot on the bottom of the brake backing plate.
4. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster 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. With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.
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.

## HYDRAULIC BRAKES

If your trailer has hydraulic brakes, they function the same way the surge brakes do on your tow vehicle. The hydraulic braking system must be inspected at least as often as the brakes on the tow vehicle, but no less than once per year. This inspection includes an assessment of the condition and proper operation of the wheel cylinders, brake shoes, brake drums and hubs.

Check the fluid level in the master cylinder reservoir at least every three months. If you tow your trailer an average of 1,000 miles per month in a hot and dry environment, you must check the brake fluid level once a month. The brake fluid reservoir is located on the tongue of the trailer. Always fill with clean, uncontaminated DOT 4 brake fluid.

Figure 18 displays the major hydraulic brake components that will require inspection and maintenance. Inspect these components by performing the steps in the MANUALLY ADJUSTING THE BRAKES section. See Table 7 for Hydraulic Brake Troubleshooting.



**Figure 18. Hydraulic Brake Components**

## AIR-OVER-HYDRAULIC BRAKE SYSTEM

An air-over-hydraulic brake system combines the use of compressed air and hydraulic pressure for brake operation by using a power cylinder that contains an air cylinder and a hydraulic cylinder in tandem. The air is used to either actuate the hydraulic brakes, or boost the hydraulic brake pressure. The rest of the mechanism is the same as that of hydraulic brakes.

## ELECTRIC BRAKES

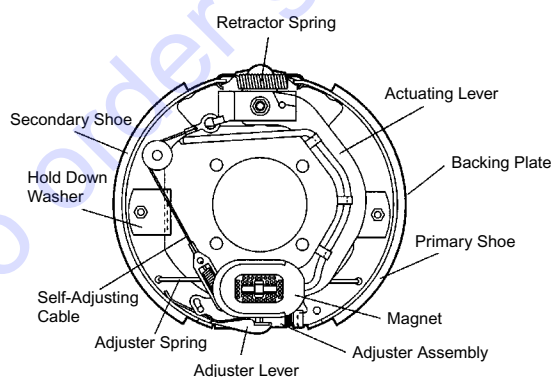
Electrically actuated brakes (Figure 19) are similar to hydraulic brakes. The basic difference is that hydraulic brakes are actuated by an electromagnet. Listed below are some of the advantages that electric brakes have over hydraulic brakes:

- Brake system can be manually adjusted to provide the corrected braking capability for varying road and load conditions.
- Brake system can be modulated to provide more or less braking force, thus easing the brake load on the towing vehicle.
- Brake system has very little lag time between the time the vehicle's brakes are actuated and the trailer's brakes are actuated.
- Brake system can provide an independent emergency brake system.

Remember in order to properly synchronize the tow vehicle's braking to the trailer's braking, can only be accomplished by road testing. Brake lockup, grabbiness or harshness is due to lack of synchronization between the tow vehicle and the trailer being towed or under-adjusted brakes.

Before any brake synchronizations adjustments can be made, the trailer brakes should be burnished-in by applying the brakes 20-30 times with approximately a 20 mph decrease in speed, e.g. 40 mph to 20 mph. Allow ample time for brakes to cool between application. This allows the brake shoes to slightly be seated into the brake drum surface.

Figure 19 displays the major electric brake components that will require inspection and maintenance. Please inspect these components as required.



**Figure 19. Electrical Brake Components**

## ELECTRICAL-OPERATED HYDRAULIC

Electric/hydraulic braking systems which are mounted on the trailer, use a small electrically-driven pump to generate hydraulic pressure, which operates the brake cylinders. Like electrical brakes, an electric/hydraulic braking system is operated by an electrical signal from the tow vehicle.

## BREAKAWAY BRAKE

### Breakaway Battery

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

### Breakaway Switch

This switch causes the breakaway battery to operate the electric brakes if the trailer uncouples from the tow vehicle. The pull cable for the pull pin is connected to the tow vehicle, and the switch is connected to the trailer. To check for proper functioning of the switch, battery and brakes, you must pull the pin from the switch and confirm 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.

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

# MAINTENANCE

**Table 7. Hydraulic Brake Troubleshooting**

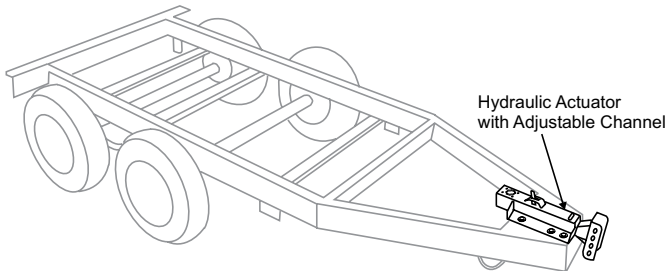
Symptom	Possible Cause	Solution
No Brakes	Brake line broken or kinked?	Repair or replace.
Weak Brakes or Brakes Pull to One Side	Brake lining glazed?	Reburnish or replace.
	Trailer overloaded?	Correct weight.
	Brake drums scored or grooved?	Machine or replace.
	Tire pressure correct?	Inflate all tires equally.
	Tires unmatched on the same axle?	Match tires.
Locking Brakes	Brake components loose, bent or broken?	Replace components.
	Brake drums out-of-round?	Replace.
Noisy Brakes	System lubricated?	Lubricate.
	Brake components correct?	Replace and correct.
Dragging Brakes	Brake lining thickness incorrect or not adjusted correctly?	Install new shoes and linings.
	Enough brake fluid or correct fluid?	Replace rubber parts fill with dot 4 fluid.

**Table 8. Electric Brake Troubleshooting**

Symptom	Possible Cause	Solution
No Brakes or Intermittent Brakes	Any open circuits or broken wires?	Find and correct.
	Any short circuits?	Find and correct.
	Faulty controller?	Test and correct.
	Any loose connections?	Find and repair.
	Ground wire secure?	Find and secure.
Weak Brakes or Brakes Pull to One Side	Grease or oil on magnets or linings?	Clean or replace.
	Connections corroded?	Clean and correct cause of corrosion.
	Brake drums scored or grooved?	Machine or replace.
	Brakes synchronized?	Correct.
Locking Brakes	Brake components loose, bent or broken?	Replace components.
	Brake drums out-of-round?	Replace.
Noisy Brakes	System lubricated?	Lubricate.
	Brake components correct?	Replace and correct.
Dragging Brakes	Bearings of the wheel adjusted?	Adjust.

## ACTUATOR MAINTENANCE

The actuator is the mechanism that activates the trailer's brake system and is also where the coupler is attached (See Figure 20). Maintenance of the actuator depends on the type that is used on your trailer.

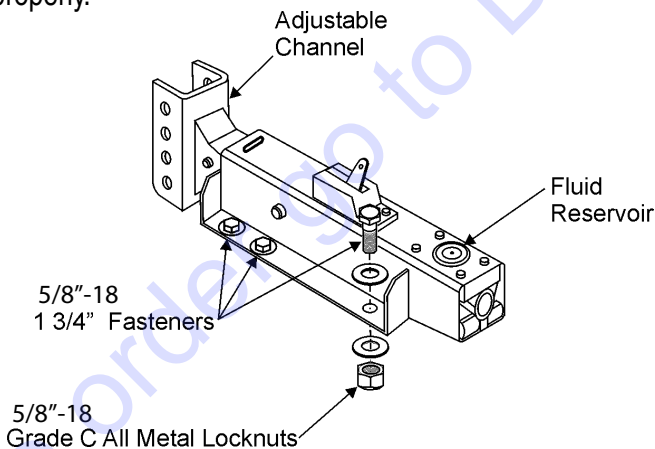


**Figure 20. Trailer Actuator**

Periodically check the actuator mounting fasteners for damage or loosening. Inspect the actuator for worn or damaged parts. As you are towing your trailer, be aware of any changes in braking quality. This could be an early warning of brake or actuator malfunction and requires immediate attention. Consult a certified brake specialist to make necessary adjustment or repairs.

### Hydraulic Actuator

A hydraulic actuator (Figure 21) changes fluid power into mechanical power. Therefore, the fluid level must be checked frequently to assure that the brakes function properly.



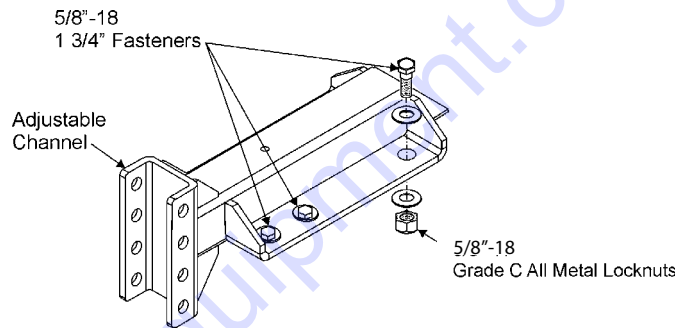
**Figure 21. Hydraulic Actuator**

#### **WARNING**

Failure to maintain proper fuel level in the actuator may result in loss of braking action which could cause severe property damage, injury or death.

### Electric Brake Adapter

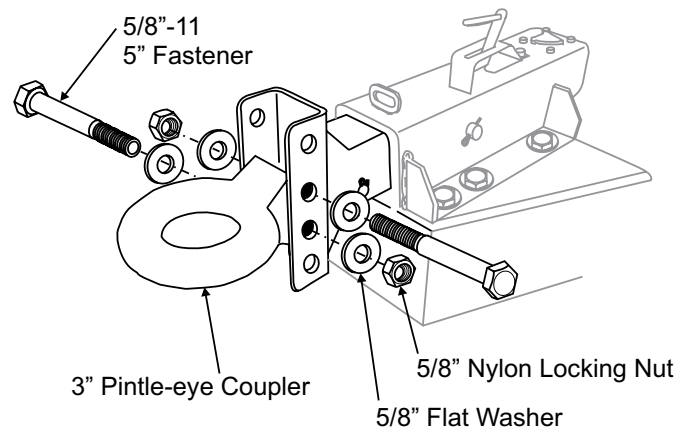
If your trailer is equipped with electric brakes, an electric brake adapter serves as the mounting platform for the adjustable channel and coupler. There are no moving parts on the adapter. Except for periodic visual inspection of the fasteners, channel and channel bolts, no other maintenance is required (Figure 22).



**Figure 22. Electric Actuator**

### Adjustable Channel

Your trailer may be equipped with an adjustable channel (Figure 23) that allows the coupler to be raise or lowered to a desired height. Periodically check the channel bolts for damage or loosening.



**Figure 23. Adjustable Channel with Pintle Eye Coupler**

#### **WARNING**

An improperly fastened coupler can cause the trailer to disengage resulting in property damage, serious injury or death.

Be sure the fasteners are tight before towing the trailer.

## BALL HITCH COUPLER

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

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

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

## PINTLE COUPLER AND PINTLE HOOK

The coupler on the trailer connects to the hook assembly attached to the hitch on the tow vehicle. The coupler, hook and hitch transfer the towing forces between the tow vehicle and the trailer. Before each tow, check the locking device that secures the coupler to the pintle hook assembly.

See the coupler manufacturer's manual for other inspection and maintenance activities. The pintle hook lever must be able to operate freely and automatically snap into place into the latched position. Lightly oil the pivot points and sliding surfaces with SAE30W motor oil to prevent rust and help ensure proper operation of the latching mechanism.

If you see or feel evidence of wear, such as flat spots, deformations, pitting or corrosion, on the pintle hook 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.

## FIFTH WHEEL KINGPIN

Before each tow, inspect the fifth wheel and kingpin for wear, and coat the contact surface of the fifth wheel plate with water-resistant lithium-base grease. If you see evidence of wear on the fifth wheel or kingpin, immediately have your dealer inspect them to determine the proper action to prevent failure of the fifth wheel and kingpin system. See the manual prepared by the manufacturer of the fifth wheel and kingpin for other inspection and maintenance activities.

## LANDING LEG OR JACK

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



## TIRE SAFETY

### Unsafe Tires, Lug Nuts or Wheels

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

If a tire has a bald spot, bulge, cuts, is showing any cords, or is cracked, replace the tire before towing. If a tire has uneven tread wear, take the trailer to a dealer service center for diagnosis.

Uneven tread wear can be caused by tire imbalance, axle misalignment or incorrect inflation.

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

Improper tire pressure causes an unstable trailer and can result in a tire blowout and loss of control. Therefore, before each tow you must also check the tire pressure. Tire pressure must be checked when tires are cold.

Allow 3 hours cool-down after driving as much as 1 mile at 40 mph before checking tire pressure. Trailer tires will be inflated to higher pressures than passenger vehicle tires.

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

The proper tightness (torque) for lug nuts is listed in the lug nut tightening section of this manual. Use a torque wrench to tighten the lug nuts. If you do not have a torque wrench, use a lug wrench (from your tow vehicle) and tighten the nuts as much as you can. Then have a service garage or trailer dealer tighten the lug nuts to the proper torque.

#### WARNING

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

Tighten lug nuts before each tow.

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

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

#### WARNING

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

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

#### WARNING

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

Be sure lug nuts are tight before each tow.

#### WARNING

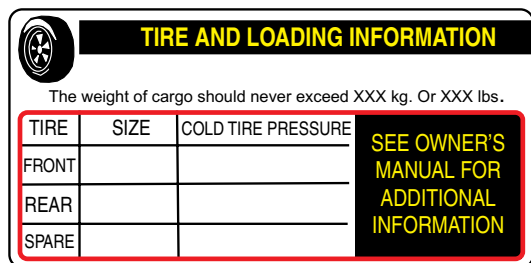
Improper tire pressure can result in a blowout and loss of control, which can lead to death or serious injury.

Be sure tires are inflated to pressure indicated on side wall before towing trailer.

### Determining Load Limit of Trailer

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most the axle can weigh.

There is a vehicle placard (Figure 24) 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.



**Figure 24. Trailer Tire Placard**

If additional work items (hoses, tools, clamps etc.) are going to be added to the trailer, be sure they are 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.

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 and Loading Information placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

Perform the following steps to determine the load limit of your trailer.

### Step 1.

Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs.,” on your vehicle’s Tire and Loading Information placard (Figure 24). This value equals the available amount of equipment load capacity.

### Step 2.

Determine the weight of the equipment being loaded on the tow vehicle. That weight may not safely exceed the available equipment load capacity. The trailer’s Tire Information Placard is attached adjacent to or near the trailer’s VIN (Certification) label at the left front of the trailer (See Figure 24).

## Determining Load Limit of Tow Vehicle

### Step 1.

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

### Step 2.

Determine the combined weight of the driver and passengers who will be riding in your vehicle.

### Step 3.

Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.

### Step 4.

The resulting figure equals the available amount of cargo and luggage capacity. For example, if the “XXX” amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.).

### Step 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 Step 4.

If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle’s manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

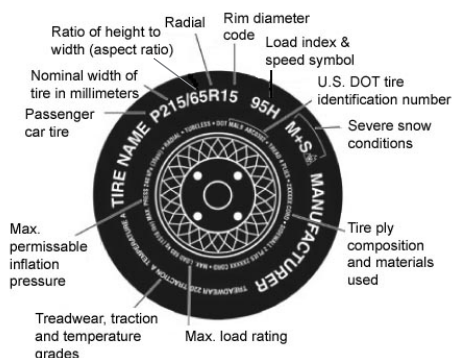
Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards and inspecting tires for cuts, slashes and other irregularities are the most important 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 tire life.

Use the information contained in this section 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.

## TIRE FUNDAMENTALS

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires (Figure 25). This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.



**Figure 25. Standard Tire Sidewall Information**

**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.

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

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

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

not required by law.

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

**Speed Rating:** The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed in Table 9. *Note:* You may not find this information on all tires because it is not required by law.

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

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

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

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

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

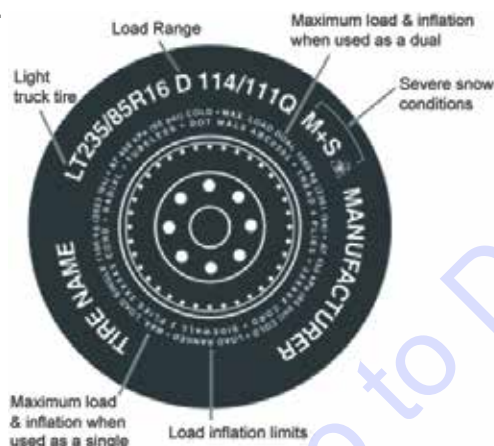
## Uniform Tire Quality Grading Standards (UTQGS)

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

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

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

Refer to Figure 26 for additional tire information for light trucks.



**Figure 26. UTQGS Tire Information**

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

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

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

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

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

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

## Tire Safety Tips

- Slow down if you have to go over a pothole or other object in the road.
- **DO NOT** run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.
- Check tire inflation pressure weekly during use to insure the maximum tire life and tread wear.
- **DO NOT** bleed air from tires when they are hot.
- 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.
- **ALWAYS** check tire pressure on tow vehicle and trailer before towing. Check tire pressure at least once a month.
- **DO NOT** overload tow vehicle. Check the tire information and loading placard for safe allowable tire loading conditions.







## 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.


## Replacing Worn or Damaged Tires

Replace the tire before towing the trailer if the tire treads have less than 1/16 inch depth or the telltale bands are visible. Check inflation pressure weekly during use to insure the maximum tire life and tread wear. 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.

Table 10 below will help pinpoint the causes and solutions of tire wear problems.

Table 10. Tire Wear Troubleshooting			
Wear Pattern	Cause	Solution	
	Center Wear	Over inflation.	Adjust pressure to particular load per tire manufacturer.
	Edge Wear	Under inflation.	Adjust pressure to particular load per tire manufacturer.
	Side Wear	Loss of camber or overloading.	Make sure load does not exceed axle rating. Align wheels.
	Toe Wear	Incorrect toe-in.	Align wheels.
	Cupping	Out-of-balance.	Check bearing adjustment and balance tires.
	Flat Spots	Wheel lockup and tire skidding.	Avoid sudden stops when possible and adjust brakes.

**WARNING**



ALWAYS wear safety glasses when removing or installing force fitted parts. **DO NOT** attempt to repair or modify a wheel. **DO NOT** install an inner-tube to correct a leak through the rim. If the rim is cracked, the air pressure in the inner tube may cause pieces of the rim to explode (break off) with great force and cause serious eye or bodily injury.

## Wheel Rims

If the trailer has been struck, or impacted, on or near the wheels, or if the trailer has struck a curb, inspect the rims for damage (i.e. being out of round); and replace any damaged wheel. Inspect the wheels for damage every year, even if no obvious impact has occurred.

## Wheels, Bearings and Lug Nuts

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

To check wheel bearings, jack trailer and check wheels for side-to-side looseness. If the wheels are loose, or spin with a wobble, the bearings must be serviced or replaced. Check inflation pressure weekly during use to insure the maximum tire life and tread wear. Most trailer axles are built with sealed bearings that are not serviceable. Sealed bearings must be replaced as complete units.

### NOTICE

**NEVER** use an pneumatic air gun to tighten wheel lug nuts. Over-tightening lug nuts will result in breaking the studs or permanently deforming the mounting stud holes in the wheels.

### WARNING

Lug nuts are prone to loosen after initial installation, which can lead to death or serious injury. Check all wheel lug nuts periodically.

## Lug Nut Torque Requirements

It is extremely important to apply and maintain proper wheel mounting torque on the trailer. Be sure to use only the fasteners matched to the cone angle of the wheel. Proper procedure for attachment of the wheels is as follows:

1. Start all wheel lug nuts by hand.
2. Torque all lug nuts in sequence. See Figure 27. **DO NOT** torque the wheel lug nuts all the way down. Tighten each lug nut in 3 separate passes as defined by Table 11.
3. Check to see if the lug nuts are tight after the first 10, 25 and 50 miles of driving and before each tow thereafter

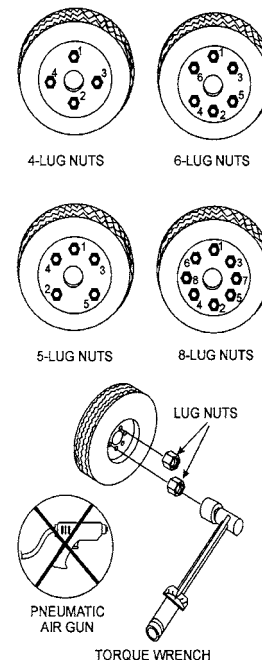


Figure 27. Wheel Lug Nuts Tightening Sequence

**Table 11. Tire Torque Requirements**

Wheel Size	First Pass FT-LBS	Second Pass FT-LBS	Third Pass FT-LBS
12"	20-25	35-40	50-65
13"	20-25	35-40	50-65
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120

## Lights and Signals

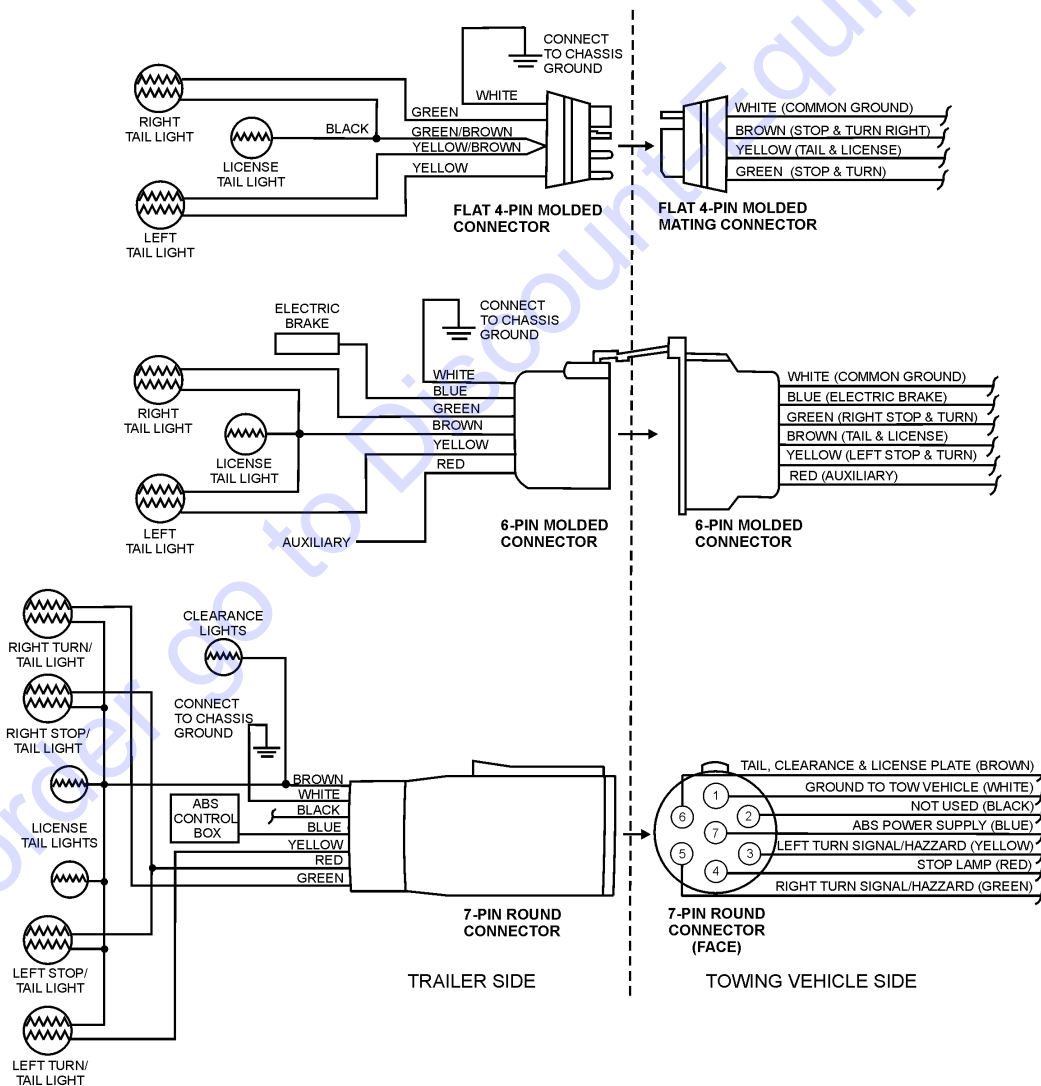
Before each tow, check the trailer taillights, stoplights, turn signals and any clearance lights for proper operation.

Replace any broken or burned-out lamps as necessary. Check the wire harness for cuts, fraying or other damage. If it needs replacing, contact Discount-equipment.

### **! WARNING**

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

Check all lights before each tow.



**Figure 28. Trailer to Tow Vehicle Wiring Diagram**

## STORAGE PREPARATION

If the trailer is to be stored for an extended period of time or over the winter, it is important the trailer is prepared properly.

1. Remove the emergency breakaway battery and store inside, out of the elements (if applicable). Charge the battery at least every 90 days.
2. Jack up the trailer and place jack stands under the trailer frame so the weight will be off the tires. Do not jack up or place jack stands on the axle tube or on the equalizers.
3. Lubricate mechanical moving parts, such as the hitch and suspension parts, that are exposed to weather.

## INSPECTION AFTER PROLONGED STORAGE

Before removing trailer from the jack stands:

1. Remove all wheels and hubs or brake drums. Note which spindle and brake that the drum was removed from so that it can be reinstalled in the same location.
2. Inspect suspension for wear.
3. Check tightness of hanger bolt, shackle bolt, and U-bolt nuts with proper torque values.
4. Check brake linings, brake drums and armature faces for excessive wear or scoring (if applicable).
5. Check brake magnets with an ohmmeter. The magnets should check 3.2 ohms (for electric brakes only). If shorted or worn excessively, replace.
6. Lubricate all brake moving parts using a high temperature brake lubricant.
7. Remove any rust from braking surface and armature surface with fine emery paper or crocus cloth. Protect bearing from contamination while cleaning.
8. Inspect oil or grease seals for wear or nicks. Replace if necessary.
9. Lubricate hub bearings.
10. Reinstall hubs and adjust bearings.
11. Mount and tighten wheels. See Table 11 for tire torque requirements and Figure 27 for tightening sequence.

## GLOSSARY OF TERMS

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**AXLE** — Indicates the maximum weight the axle can support in pounds, and the diameter of the axle expressed in inches. Please note that some trailers have a double axle. This will be shown as 2-6000 lbs., meaning two axles with a total weight capacity of 6000 pounds.

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

**BEAD SEPARATION** — This is the breakdown of the bond between components in the bead.

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

**BRAKING SYSTEM** — System employed in stopping the trailer. Typical braking systems are electric, surge, hydraulic, hydraulic-surge and air-over-hydraulic.

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

**CFR** — Code of Federal Regulations.

**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.

**COUPLER** — Type of hitch used on the trailer for towing.

**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.

**ELECTRICAL** — Electrical connectors (looms) are provided with the trailer so the brake lights and turn signals can be connected to the towing vehicle.

**EXTRA LOAD TIRE** — A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

**FRAME LENGTH** — This measurement is from the ball hitch to the rear bumper (reflector).

**FRAME WIDTH** — This measurement is from fender to fender.

**FUEL CELL** — Provides an adequate amount of fuel for the equipment in use. Fuel cells must be empty when transporting equipment.

**GROOVE** — The space between two adjacent tread ribs.

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

**GROSS VEHICLE WEIGHT RATING (GVWR)** — The maximum number of pounds the trailer can carry, including the fuel cell (empty). Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

**HITCH WEIGHT** — The downward force exerted on the hitch ball by the trailer coupler.

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

**INNERLINER SEPARATION** — The parting of the innerliner from cord material in the carcass.

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

**JACK STAND** — Trailer support device with maximum pound requirement from the tongue of the trailer.



## GLOSSARY OF TERMS

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**LOAD RATING** — The maximum load that a tire is rated to carry for a given inflation pressure.

**LUG NUTS** — Used to secure the wheel to the wheel hub. Always use a torque wrench to tighten down the lug nuts.

**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.

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

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

**OUTER DIAMETER** — The overall diameter of an inflated new tire.

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

**PLY** — A layer of rubber-coated parallel cords.

**PLY SEPARATION** — A parting of rubber compound between adjacent plies.

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

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

**RECOMMENDED INFLATION PRESSURE** — This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

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

**RIM DIAMETER** — This means the nominal diameter of the bead seat.

**RIM SIZE DESIGNATION** — This means the rim diameter and width.

**RIM TYPE DESIGNATION** — This means the industry of manufacturer's designation for a rim by style or code.

**RIM WIDTH** — This means the nominal distance between rim flanges.

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

**SIDEWALL** — That portion of a tire between the tread and bead.

**SIDEWALL SEPARATION** — The parting of the rubber compound from the cord material in the sidewall.

**SPECIAL TRAILER (ST) TIRE** — The "ST" is an indication the tire is for trailer use only.

**SUSPENSION** — Protects the trailer chassis from shocks transmitted through the wheels. Types of suspension used are leaf, Q-flex, and air ride.

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

**TIRE PLY** — The tire ply (layers) number is rated in letters; 2-ply, 4-ply, 6-ply, etc.

**TIRE RIM** — Tires mounted on a tire rim. The tire rim must match the size of the tire.

**TIRE SIZE** — Indicates the diameter of the tire in inches (10, 12, 14, etc.), and the width in millimeters (175, 185, 205, etc.). The tire diameter must match the diameter of the tire rim.

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

## GLOSSARY OF TERMS

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**TREAD RIB** — A tread section running circumferentially around a tire.

**TREAD SEPARATION** — Pulling away of the tread from the tire carcass.

**TREADWEAR INDICATORS (TWI)** — The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

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

**VEHICLE MAXIMUM LOAD ON THE TIRE** — The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

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

**WEATHER SIDE** — The surface area of the rim not covered by the inflated tire.

**WHEEL HUB** — The wheel hub is connected to the trailer's axle.

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