Things to Know – Before You Tow

If you already have a tow vehicle, look up its tow rating—size, ***maximum loaded weight, and maximum tongue weight of a trailer that the tow vehicle is capable of towing.*** The vehicle owner's manual contains these specifications. Most automotive manufacturers and dealerships have towing specification guides with tow ratings and detailed information if extra equipment is needed to tow a trailer. While your vehicle may have certain tow ratings, remember you must have a matching hitch system that can handle the same specifications. To ensure safety, you may have to install extra towing equipment.

Manufacturers' Tow Vehicle Ratings

Manufacturers' tow vehicle ratings address **tongue weight,** ***as well as the individual, combined, and fully loaded weights*** at which a tow vehicle can safely tow a trailer. They also can be used to guide the selection of brake and hitching systems, as well as tow vehicle tires. Together with the hitch system specifications, these weight considerations will help you purchase a safe tow vehicle. In general, manufacturers provide tow ratings for the *maximum*

- **Amount the tow vehicle may weigh when fully loaded, or Gross Vehicle Weight Rating (GVWR).**
- **Weight a vehicle can tow. This figure may vary depending on the vehicle's equipment, such as a manual or automatic transmission and whether it is equipped with four-wheel drive.**
- **Permissible combined weight of the tow vehicle, trailer, passengers, equipment, fuel, etc., that the vehicle can handle, or Gross Combination Weight Rating (GCWR).**
- ***Weight a single axle can carry, or Gross Axle Weight Rating (GAWR).***

Measuring the Weight of a Trailer

Some manufacturers provide a “dry” or empty weight for trailers; however, to select a proper tow vehicle and hitching system, ***you must know how much your trailer weighs fully loaded.*** For example, if you are towing an open trailer that carries a boat or motorcycle, the fully loaded weight includes the weight of the trailer with the boat or motorcycle and any additional items being towed, such as fuel tanks, motors, and safety equipment.

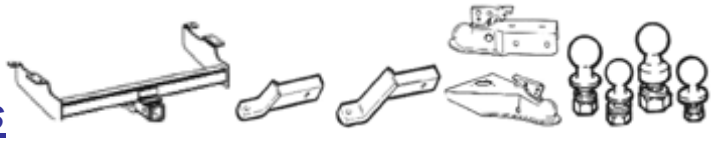
Develop a realistic estimate of the total weight of your trailer. The time you spend doing this and getting properly equipped will save you time and money in preventing unexpected repairs to your tow vehicle and unanticipated breakdowns while on the road. In addition to speaking with dealers and other individuals who sell and use trailers, ***the best way to know the actual weight of your trailer is to weigh it at a public scale.***

Manufacturers consider the loaded weight of a trailer when ***specifying tongue weight—the amount of the trailer’s weight that presses down on the trailer hitch. Too little tongue weight can cause the trailer to sway. *Too much tongue weight can cause many problems, including not enough weight on the front wheels of the tow vehicle.*** When this occurs, the tow vehicle will be less responsive to steering. A weight-distributing hitch can remedy this problem by transferring weight to the front axle of the tow vehicle.

Manufacturers also establish the gross axle weight and provide a rating that denotes the maximum weight a single axle can carry. Knowing these weights will help you when it is time to load your trailer. ***Remember that the gross axle weight rating listed on the tow vehicle’s certification label must not be exceeded.***

Tow vehicles and trailers must be compatible with hitching, braking, and wiring systems to ensure safety.

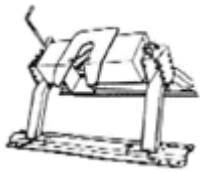
Hitching Systems



The trailer towing industry has developed a classification system that differentiates hitches according to the amount of weight they can tow. This system addresses ***tongue weight and total weight.*** Keep in mind that within each classification are numerous hitches made by a variety of manufacturers.

The three most common types of hitches are the weight-carrying hitch, the weight-distributing (or load equalizer) hitch, and the fifth-wheel hitch, or gooseneck.

Weight-carrying hitches are designed to carry all of the trailer's tongue weight. Weight-distributing hitches are used with a receiver hitch and special parts that distribute the tongue weight among all tow vehicle and trailer axles. **Fifth-wheel hitches** are designed for mounting the trailer connection point in the middle of the truck bed.



fifth-wheel hitches

When purchasing a hitch, use the recommendations of the manufacturer of the tow vehicle and trailer based on the type and weight of the trailer. Make sure the hitch has provisions for the connection of **safety chains,** which are required by most states. ***When connected, safety chains should have some slack to permit sharp turns but should not drag on the road. In addition, they should cross under the trailer tongue to help prevent the tongue from dropping to the road in the event the trailer separates from the tow vehicle.***

safety chains

Braking Systems

The selection of a brake system also will depend on your tow vehicle and the type and fully loaded weight of your trailer. ****For a trailer with a loaded weight of more than 1,500 pounds, many states require a separate braking system and a breakaway switch,*** located on the tongue of the trailer, to activate the trailer brakes in the event the trailer separates from the tow vehicle. There are two basic types of brake systems designed to activate the brakes on a trailer:

- ***Electronically controlled brakes usually provide automatic and manual control for trailer brakes.*** They require that the tow vehicle be equipped with a controlling device and additional wiring for electrical power. These brakes typically have a control box installed within reach of the driver and can be manually or automatically applied. The control box may require adjustment or "tuning in" for variations in trailer load.

- ***Surge brakes are independent hydraulic brakes activated by a master cylinder at the junction of the hitch and trailer tongue.*** These brakes are not controlled by the hydraulic fluid in the brake system of the tow vehicle. Note: The hydraulic system of the tow vehicle should never be directly connected to the hydraulic system of the trailer. These systems are self-compensating and do not require adjustment for variation in trailer load.

Follow the tow vehicle manufacturer's recommendations for brake selection. Some states require braking systems on all axles of the trailer. So, check your state's requirements by contacting the motor vehicle administration.

Wiring Systems

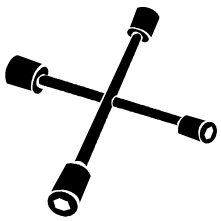
Federal law requires trailers to have taillights, brake lights, side marker lights, turn signals, and side and rear reflectors. Some trailers also have backup lights. To provide power to these lights, a four-way (or more) connector is hooked into the tow vehicle's electrical system. Many tow vehicle manufacturers offer a 7-way **connector** that may include an electric brake signal, power supply, and backup lights, in addition to the typical four functions. Note: You must ensure that the signals on the electrical connector of the tow vehicle match the electrical connector of the trailer.

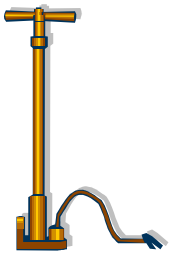
connector

Because the wiring systems of many tow vehicles use separate wires for turn signals and stop lights, you may need to purchase a taillight converter. This converter will combine these wires so that they can be connected to the trailer lighting system. Most factory-installed towing packages include a trailer wire harness that will perform this function if required. If you tow more than one type of trailer, you also may need to purchase an adapter to accommodate differences in the wiring systems.

Tires

****All your trailer tires should be the same type, size, and construction***—do not mix bias-belted and radial tires. In selecting tires for your trailer, buy the size, type, and load range found on the trailer's certification label or in the owner's manual. ***Keep in mind that tires have a load rating that indicates the amount of weight they can carry safely.*** As with your tow vehicle, always maintain proper tire pressure and replace worn tires. Remember—your tow vehicle tires may require a higher tire pressure for towing, especially heavy loads.





Loading and Weight Distribution

Your ability to handle and control your tow vehicle and trailer is greatly improved when the cargo is properly loaded and distributed. Refer to your tow vehicle and trailer owner's manual to find out how to:

- ***Balance weight from side to side***
- ***Distribute cargo weight evenly along the length of the trailer***
- ***Secure and brace all items to prevent them from moving during travel***
- ***Adjust the height of the tow vehicle/trailer interface***
- ***Apply load leveling (weight distributing hitch bars)***

Most trailers and tow vehicles should be level (parallel to the ground) during travel. Check the instructions from your trailer manufacturer to make sure this is correct for your combination of vehicles.

State and Local Requirements for Towing

States and municipalities may require special permits and licenses based on the size and weight of your trailer, especially if it is over *eight feet wide. Some states require additional equipment for the tow vehicle, such as side- and rear-view mirrors. Inquire at your local motor vehicle administration to find out what requirements affect you.

If you plan to travel in another state, don't forget to check its requirements also. For example, surge brakes may not be legal in some jurisdictions. In addition to licenses and permits, there may be weight, height, and width limits for using certain roads, bridges, and tunnels. Also, be aware of restrictions regarding the transport of propane gas and other volatile gases or fuels in tunnels. And don't forget to contact your insurance company to make sure you have the proper coverage.

Pre-Departure Safety Checklist

- ***Check and correct tire pressure on the tow vehicle and trailer.***
- ***Make sure the wheel lug nuts/bolts on the tow vehicle and trailer are tightened to the correct torque.***
- ***Be sure the hitch, coupler, draw bar, and other equipment that connect the trailer and the tow vehicle are properly secured and adjusted.***
- ***Check that the wiring is properly connected—not touching the road, but loose enough to make turns without disconnecting or damaging the wires.***
- ***Make sure all running lights, brake lights, turn signals, and hazard lights are working.***
- ***Verify that the brakes on the tow vehicle and trailer are operating correctly.***
- ***Check that all items are securely fastened on and in the trailer.***
- ***Be sure the trailer jack, tongue support, and any attached stabilizers are raised and locked in place.***
- ***Check load distribution to make sure the tow vehicle and trailer are properly balanced front to back and side to side.***
- ***Check side- and rear-view mirrors to make sure you have good visibility.***
- ***Check routes and restrictions on bridges and tunnels.***
- ***Make sure you have wheel chocks and jack stands.***

Safety Tips for Driving with a Trailer

Take time to practice before driving on main roads and never allow anyone to ride in or on the trailer. Before you leave, remember to check routes and restrictions on bridges and tunnels. Consider the following safety tips each time you drive with a trailer.

General Handling

- ***Use the driving gear that the manufacturer recommends for towing.***
- ***Drive at moderate speeds. This will place less strain on your tow vehicle and trailer. Trailer instability (sway) is more likely to occur as speed increases.***
- ***Avoid sudden stops and starts that can cause skidding, sliding, or jackknifing.***
- ***Avoid sudden steering maneuvers that might create sway or undue side force on the trailer.***
- ***Slow down when traveling over bumpy roads, railroad crossings, and ditches.***
- ***Make wider turns at curves and corners. Because your trailer's wheels are closer to the inside of a turn than the wheels of your tow vehicle, they are more likely to hit or ride up over curbs.***
- ***To control swaying caused by air pressure changes and wind buffeting when larger vehicles pass from either direction, release the accelerator pedal to slow down and keep a firm grip on the steering wheel.***

Braking

- ***Allow considerably more distance for stopping.***
- ***If you have an electric trailer brake controller and excessive sway occurs, activate the trailer brake controller by hand. Do not attempt to control trailer sway by applying the tow vehicle brakes; this will generally make the sway worse.***
- ****Always anticipate the need to slow down. To reduce speed, shift to a lower gear and press the brakes lightly.***

Acceleration and Passing

- When passing a slower vehicle or changing lanes, signal well in advance and make sure you allow extra distance to clear the vehicle before you pull back into the lane.
- Pass on level terrain with plenty of clearance. Avoid passing on steep upgrades or downgrades.
- If necessary, downshift for improved acceleration or speed maintenance.
- When passing on narrow roads, be careful not to go onto a soft shoulder. This could cause your trailer to jackknife or go out of control.

Downgrades and Upgrades

- Downshift to assist with braking on downgrades and to add power for climbing hills.
- *On long downgrades, apply brakes at intervals to keep speed in check. Never leave brakes on for extended periods of time or they may overheat.
- Some tow vehicles have specifically calibrated transmission tow-modes. Be sure to use the tow-mode recommended by the manufacturer.

Backing Up

- Put your hand at the bottom of the steering wheel. To turn left, move your hand left. To turn right, move your hand right. Back up slowly. Because mirrors cannot provide all of the visibility you may need when backing up, have someone outside at the rear of the trailer to guide you, whenever possible.
- Use slight movements of the steering wheel to adjust direction. Exaggerated movements will cause greater movement of the trailer. If you have difficulty, pull forward and realign the tow vehicle and trailer and start again.

Parking

- Try to avoid parking on grades. ***If possible, have someone outside to guide you as you park.*** Once stopped, but before shifting into Park, have someone place blocks on the downhill side of the trailer wheels. Apply the parking brake, shift into Park, and then remove your foot from the brake pedal. Following this parking sequence is important to make sure your vehicle does not become locked in Park because of extra load on the transmission. For manual transmissions, apply the parking brake and then turn the vehicle off in either first or reverse gear.

- ***When uncoupling a trailer, place blocks at the front and rear of the trailer tires to ensure that the trailer does not roll away when the coupling is released.***

- ***An unbalanced load may cause the tongue to suddenly rotate upward; therefore, before un-coupling, place jack stands under the rear of the trailer to prevent injury.***

Maintenance

Tow vehicles often have more frequent maintenance requirements, including changes of engine and transmission oils and filters, lubrication of components, and cooling system checks. Check your owner's manual for information on scheduled maintenance of your tow vehicle and trailer. Here are some additional maintenance suggestions.

Tires

Periodic inspection and maintenance of tow vehicle and trailer tires and wheels are essential to towing safety, including spare tires. Proper tire pressure affects vehicle handling and the safety of your tires. You can find the correct tire pressure for your tow vehicle in the owner's manual or on the tire information placard.

- ****Under inflation reduces the load-carrying capacity of your tow vehicle or trailer, may cause sway and control problems, and may result in overheating, causing blowouts or other tire failure.***

- ***Over inflation causes premature tire wear and affects the handling characteristics of the tow vehicle or trailer.***

Brakes

On a regular basis, have the brakes on both vehicles inspected. Be sure that necessary adjustments are made and any damaged or worn parts are replaced.

Hitch

Check the nuts, bolts, and other fasteners to ensure that the hitch remains secured to the tow vehicle and the coupler remains secured to the trailer. The connection point may require periodic lubrication to permit free movement of the coupler to the hitch ball.

Wiring

Make sure connector-plug prongs and receptacles, light bulb sockets, wire splices, and ground connections are clean and shielded from moisture. Lightly coat all electrical terminal connections with nonconducting (dielectric), light waterproof grease.

Clean the prongs with very fine sandpaper, being careful not to damage the contact area.

Clean the surface deposits in the connector holes. (Make sure the lights are off to prevent blowing a fuse.) Try to clean off only the deposits and lubricate lightly with dielectric, light waterproof grease.

Resources

To Report Safety Problems and Obtain More Information

If you have a safety problem with your vehicle, or if information is missing from your trailer certification label, call the DOT Auto Safety Hotline at (888) 327-4236/TDD (800) 424-9153.

For Additional Information

- ***National Association of Trailer Manufacturers (NATM)***
  2945 SW Wanamaker Drive, Suite A
  Topeka, KS 66614-5321
  (785) 271-0208 (785) 271-0166 Fax

Towing Safety Quiz

1. Too much tongue weight will cause the trailer to sway. T or F

2. Trailers with a loaded weight of more than 1500 Lbs. may require separate braking systems. T or F

3. _____ must be the same type, size and construction pertaining to trailers.

4. Always anticipate the need to _____ _____.

5. Special permits and licenses may be needed if your load is over _____ feet wide.

6. On long downgrades apply continuous brake pressure to keep speed in check. T or F

7. Under-inflated tires can cause overheating and blowouts. T or F