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# Selecting Vehicles for Towing



Trailer towing presents many major concerns relating to legality, equipment reliability, safety and ultimately, liability. Therefore, we have put together this brochure to assist our federal customers in trailer towing operations. This information is intended to cover light-duty trailers of less than 16,000 LBS GVW, as opposed to semitrailers designed to be pulled by truck tractors.

## SELECTING VEHICLES FOR TOWING

If you are selecting a vehicle that will be used for towing, you will need to know (or determine) the weight of the trailer you intend to tow, including the weight of any additional cargo and fluids that you will be carrying in the trailer. Also be sure the tow vehicle has the proper optional equipment for towing. Most manufacturers offer trailer towing packages that include heavy-duty components such as transmission coolers and larger radiators.

## TERMS TO KNOW:

**Gross Combination Weight (GCW)** is the actual weight of the loaded tow vehicle (GVW) plus the actual weight of the fully loaded trailer. It is the weight obtained when the fully loaded vehicle and trailer are weighed together on a scale.

**Gross Combination Weight Rating (GCWR)** is the maximum allowable weight of the towing vehicle and the loaded trailer – including all cargo and passengers – that the tow vehicle can handle without safety risks or costly damage to engine, transmission, driveline, or other components. The GCWR is determined by the vehicle manufacturer, and takes into account the combination of selected engines, transmissions and rear axle ratios. These ratings are published in owner's manuals and other vehicle manufacturers' publications. The measured GCW must never exceed the GCWR.

*NOTE: This rating assumes that any trailers will have their own operational brakes. Brakes on tow vehicles are certified only to the vehicle GVWR, regardless of what the GCWR may be.*

**Gross Vehicle Weight Rating (GVWR)** is the maximum allowable weight of the fully loaded vehicle (including passengers and cargo). This number, along with other weight limits, as well as tire, rim size and

inflation pressure data, is shown on the vehicle's Safety Compliance Certification Label, located on the left front door lock facing or the door latch post pillar. The GVW must never exceed the GVWR.

## WEIGHTS TO CHECK:

**Base Curb Weight + Cargo Weight + Passenger Weight = Gross Vehicle Weight (GVW)**

*GVW must not exceed GVWR (obtain from Safety Compliance Certification Label on the left front door lock facing or the door latch post pillar).*

**GVW + Loaded Trailer Weight = Gross Combination Weight (GCW)**

*GCW must not exceed GCWR (obtain from vehicle's Owner Guide).*

Tongue Weight is another critical measurement that must be made before towing. It refers to the amount of the trailer's weight that presses down on the trailer hitch. Too much tongue weight can cause suspension/drivetrain damage and can press the vehicle down in back, causing the front wheels to lift to the point where traction, steering response and braking are severely decreased. Too little tongue weight can reduce rear-wheel traction and cause instability that may result in tail wagging or jackknifing. For proper handling, tongue loads must meet the following requirements:

- For trailers up to 2,000 lbs., not to exceed 200 lbs.
- For trailers over 2,000 lbs., 10 - 15% of trailer weight.
- For fifth-wheel trailers, approximately 25% of trailer weight.

## GENERAL TRAILERING TIPS

Trailer towing is a special driving situation that places extra demands on your driving skills. We have included a few basic tips that you should know in order to transport your trailer and its contents safely, comfortably and without abusing the towing vehicle:

To measure actual tongue load, disconnect the trailer and place only the tongue – with the coupler at hitch ball height – on a scale. If the tongue load exceeds the upper weight limit, move more of the trailer contents rearward to achieve the recommended tongue load. If the tongue load is less than the lower limit, shift the load forward.

## ADDITIONAL POWERTRAIN CONSIDERATIONS

GCWR ratings take into account the minimum engine size needed to move the gross combination weight of the tow vehicle and trailer. Under certain conditions, however, (when the trailer has a large frontal area that adds substantial air drag, when at high altitudes, or when trailering in hilly or mountainous terrain) it's wise to choose a larger engine. Diesel engines are usually recommended for applications where trailer towing is frequent, as diesels possess performance and fuel economy characteristics that are advantageous for towing.

## TRAILER BRAKE REQUIREMENTS:

A separate functional brake system should be used on any trailer or towed vehicle, including those dolly-towed or towbar-towed. The towing vehicle's brake system is rated for operation at the tow vehicle GVWR – NOT GCWR. Tow vehicle braking systems are not designed or certified to carry the additional braking load created by trailers. The towing vehicle manufacturers and most states require operational brake systems for all trailers having a gross weight of 1,000 lbs. or more. Be aware that trailers with surge brakes do not comply with Federal Motor Carrier Safety Regulations 393.48 or 393.49 and therefore cannot be used in commercial applications.

## HITCH AND TRAILER WEIGHT CLASSES:

### Class I – Light-Duty

2,000 pound maximum gross trailer weight. Can be pulled with non-equalizing load-carrying hitch, except when other types are recommended by the manufacturer of the tow vehicle.

### Class II – Medium-Duty

2,001 - 3,500 pounds maximum gross trailer weight. Can be pulled with non-equalizing load-carrying hitch, except when other types are recommended by the manufacturer of the tow vehicle.

### Class III – Heavy-Duty

3,501 - 5,000 pounds maximum gross trailer weight. Can be pulled with non-equalizing load-carrying hitch, except when other types are recommended by the manufacturer of the tow vehicle.

### Class IV – Extra Heavy-Duty

5,001 - 12,000 pounds maximum gross trailer weight. Weight-distributing anti-sway hitch is required for this class trailer.

*NOTE: Trailer gross weights exceeding 10,000 pounds may require a fifth wheel type (bed) hitch.*

## TRAILER SAFETY CHAINS

Always use safety chains when towing. Safety chains are used to retain connection between the towing and towed vehicle in the event of separation of the trailer coupling or ball. Cross the chains under the trailer tongue and allow enough slack for turning corners. See your vehicle and hitch owner's guides for safety chain attachment information. When using a frame-mounted trailer hitch, attach the safety chains to the frame mounted hitch, using the recommendations supplied by the hitch manufacturer.

## WEIGHT DISTRIBUTION

For optimum handling, the trailer should be properly loaded and balanced. Keep the center of gravity low for best handling. Approximately 60% of the cargo weight should be in the front half of the trailer and 40% in the rear (within limits of Tongue Weight). Load should also be balanced from side to side for good handling and proper tire wear. All loads should be firmly secured to prevent shifting during cornering or braking, which could result in a sudden loss of control.

## BRAKING

Allow considerably more distance for stopping with a trailer attached. If you have a manual brake controller, "lead" with the trailer brakes, if possible. To correct trailer side-sway, apply trailer brakes momentarily without using vehicle brakes.

## ACCELERATION AND PASSING

The added weight of the trailer will dramatically decrease the acceleration of the towing vehicle — exercise caution. If you must pass a slower vehicle, be sure to allow extra distance. Make passes on level terrain with plenty of clearance. If necessary, downshift for improved acceleration.

## DRIVING WITH AN AUTOMATIC OVERDRIVE TRANSMISSION

With certain car and light truck automatic overdrive transmissions, towing – especially in hilly areas – may result in excessive shifting between overdrive and the next lower gear. If this occurs, it is recommended that the overdrive gear be locked out to eliminate the condition and provide steadier performance (see your vehicle owner's guide for information). When there is no excessive shifting, use the overdrive gear for optimum fuel economy. Overdrive also may be locked out to obtain engine braking on downgrades.

For additional assistance you may call (703) 308-CARS (2277) or visit us on the web at [www.gsa.gov/automotive](http://www.gsa.gov/automotive).