



# Avoiding Rear-End Collisions

*Believing that an investment in Safety is an investment in Your Future.*

Each year rear-end collisions account for millions of dollars in property damage and bodily injury losses. While collisions between any two vehicles is highly dangerous, a rear-end collision involving a large commercial vehicle greatly increases the risk of serious injuries and substantial property damage losses.

The National Safety Council defines a preventable collision as "one in which the driver failed to do everything reasonable to avoid the collision." The key word is reasonable. Is it reasonable for a professional driver to follow another vehicle too closely?

Rear-end collisions are preventable. Below are some tips safety professionals recommend to help avoid rear-end collisions:

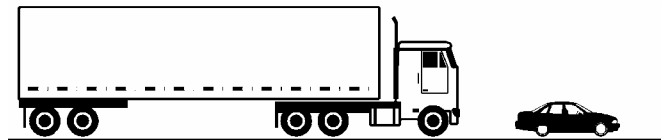
- Maintain a safe following distance behind the vehicle in front of you.
- Scan the road ahead as far as you can see. Watch for unexpected brake lights, changing traffic signals, pedestrians, and other vehicles pulling onto the roadway.
- Listen to your C.B. radio or traffic reports on the AM/FM radio for changing road conditions and trouble spots.
- If possible, plan your trip to avoid rush hour traffic in metropolitan areas.
- Increase your following distance during adverse road, weather, and traffic conditions.
- During extreme adverse road and weather conditions, find a safe place to park and wait until conditions improve.
- Slow down well in advance of intersections and toll booths. Fuel, oil, and grease dripping from stopped vehicles in these areas can create slick pavement. During winter months, ice may accumulate in these areas.

- Don't assume that because a traffic light is yellow the driver of the vehicle in front of you is going to go through the intersection.
- Avoid stopping too closely to the vehicle in front of you at intersections. Keep at least one full vehicle length between you and the other vehicle. Be alert for vehicles that may pull away from a traffic light and then stop suddenly.
- Do not roll through intersections. Keep your eyes on the vehicle ahead of you. Be sure you can stop safely if the driver of the vehicle in front of you stops suddenly.

Significant property damage or serious injury can occur even at low speeds. Remember that when you double the speed of your vehicle, you quadruple the force at impact in a collision.

Here is a simple question professional drivers should ask themselves:

*"How close would I follow the vehicle ahead of me if my family or loved ones were in that vehicle?"*



Professional drivers must be in control of their vehicles at all times. Remember, if you are following too closely, you really are not in full control of your vehicle. The driver of the vehicle in front of you and other nearby motorists control whether you are involved in a collision.

*(over please)*

Before you begin a trip, consider these questions as you make your preparations:

*Did I thoroughly inspect my vehicle?*

*Are my brakes adjusted properly?*

*Am I well rested? Can I react quickly if necessary to avoid a collision?*

*Is the windshield clean, inside and out?*

*Are my headlights, and other lights and reflective surfaces, clean and working properly?*

Definitions to know:

**Perception distance:** The distance a vehicle travels from the time the driver first sees a hazard to the time he/she decides to brake. For the average person, perception time is about 1  $\frac{3}{4}$  seconds.

**Reaction distance:** The distance a vehicle travels after the driver decides to apply the brakes but before the brakes are actually applied. The average reaction time for most drivers is  $\frac{3}{4}$  of a second.

**Brake-lag distance:** The distance a vehicle travels after the brakes are applied but before they are actually engaged. For heavy commercial vehicles with air-brake systems, brake lag time is about 0.4 seconds.

**Braking distance:** The distance it takes a vehicle to stop after the brakes are engaged. Actual braking distance varies depending on such things as speed, load, road and weather conditions, type of road surface, tire style and condition, and brake system efficiency.

Stopping Distance Illustrated:

Your visibility is 300 feet (about the length of a football field). Imagine yourself at one end of a football field and you can barely see the goal post on the other side of the field because of poor visibility (rain, darkness, fog, snow, dirty headlights/windshields). You are traveling at 55 mph when you see an automobile stopped in your lane of traffic, approximately 300 feet in front of you (about the length of five tractor-trailers parked end-to-end)).

First, convert your speed from miles per hour to feet per second by multiplying your speed times 1.48 ( $55 \times 1.48 = 81$ ). Your speed at 55 mph is approximately 81 feet per second (f/s).

*Perception distance:*  $1 \frac{3}{4}$  seconds  $\times$  81 f/s = 142 feet  
( $1 \frac{3}{4}$  of a second to perceive the hazard)

Distance left to impact = 158 feet

*Reaction distance:*  $\frac{3}{4}$  second  $\times$  81 f/s = 61 feet ( $\frac{3}{4}$  of a second to react to the hazard)

Distance left to impact = 97 feet

*Brake lag distance:* 0.4 seconds  $\times$  81 f/s = 32 feet (0.4 seconds for the brakes to apply)

Distance left to impact = 56 feet

*Braking distance:* At 55 mph on dry pavement with good brakes, it will take a tractor/trailer approximately 168 feet to stop after the brakes are engaged.

*Note: Actual stopping distance depends on many factors, including road surface texture, vehicle configuration, slope of the road, condition of the vehicle's tires and brake system, and driver alertness.*

***In this example, a rear-end collision is imminent.*** This exercise demonstrates that rear-end collisions can be avoided by operating the vehicle at a safe speed and maintaining the proper following distance.

### Calculating Following Distance:

According to the National Safety Council, the recommended following distance for heavy commercial vehicles under ideal road and weather conditions is calculated by multiplying one second for each ten feet of vehicle length and adding one additional second for speeds over 40 mph. Following distance should be increased further during adverse road or weather condition.

*Example:* The recommended following distance for a 60-foot tractor-trailer traveling 55 mph is 7 seconds [(60 feet ÷ 10) + 1 sec. = 7 seconds]

*(National Safety Council recommended following distance for heavy trucks)*

Establish the recommended following distance by counting the seconds (one-thousand-one, one-thousand-two, etc.) that elapse from the time the vehicle in front of you passes a landmark until your vehicle reaches the same landmark.

One strategy to help decrease your stopping distance is to be on “ready alert” when you spot a hazardous situation. This requires you to take your foot from the accelerator and cover your brake pedal. By doing this, your vehicle will begin slowing down and you will be prepared to apply the brakes more quickly if necessary. This strategy is recommended in areas that may present unexpected hazards, such as intersections, construction zones, areas where traffic is merging, or in areas where pedestrians are present.

On the open highway, maintaining the proper following distance is made easier because traffic density is usually low enough to permit motorists to set their pace and following distance. In congested traffic areas, maintaining a speed that is a few miles per hour lower than the surrounding traffic is recommended. The affect of having traffic move slightly faster will automatically help you maintain the safe following distance you need.

Remaining alert, patient, and courteous are hallmark characteristics of an experienced, professional driver. Professional drivers make adjustments to their driving habits to reflect changing conditions and to ensure the safety and well being of themselves and the public.

---

*"DISCLAIMER The information contained in this document is for informational purposes only and is not intended as, nor does it constitute, legal or professional advice to the reader. In no event will Travelers or any of its affiliates be liable in tort or in contract to anyone who has access to or uses this information. Additionally, the information contained herein does not constitute and shall not be construed to reflect the adoption of any coverage position by Travelers or any of its affiliates in connection with any of the topics or considerations set forth herein. Travelers does not warrant that the information in this document constitutes a complete and finite list of each and every item or procedure related to the topics and issues referenced herein. Federal, state, and local laws, regulations, standards and codes may change over time, and the reader should always refer to the most current requirements, as applicable."*