Get Rear Zone Control

8

- When your foot goes to the brake, check rearview mirror.
- Before moving to either side, check the sideview mirror.
- Check blind area with head movement or convex mirror.
- When backing, check all mirrors continuously.

Using Mirrors to Control the Rear Zones

There are Three Mirror Types

1. The Inside Rearview Mirror

The inside mirror is the main mirror to detect vehicles that are in the lane you are traveling in. This mirror should be checked before, during, and after taking a braking action. When the foot goes onto the brake pedal, the eyes should go to the rear view mirror.

2. The Outside Rearview Mirrors

The outside rearview mirror is the main mirror to detect a vehicle that will be approaching from an adjacent lane. This mirror should be checked before moving the vehicle to either side. Check this mirror before making a lane change, before merging into a traffic flow, and before making a turn.

3. Convex Mirrors

There are limitations to how wide of a viewing angle the outside mirrors will have. Regardless of how they are adjusted, there are blind areas not detected by the mirrors. To compensate for the blind areas, a convex mirror can be added to the vehicle's outside mirror. A convex mirror has a curved surface that gives a wider view. The convex mirror is a replacement for having to make a head movement to check the blind areas of the mirror.

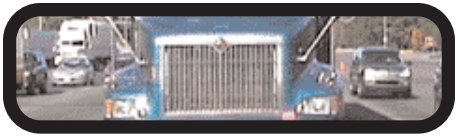
Head Movement to Detect Blind Area

One way you can check the blind areas of the mirrors, if you do not have convex mirrors mounted, is to move your head about eight inches forward while looking into the side view mirror. That will increase the width of the viewing angle and detect any vehicle not seen otherwise.

Why Check Mirrors?

If someone placed a stick of dynamite that could explode at any moment in the trunk of your car, would you want to know about it? A vehicle plowing into you from behind, especially a large truck, can have the potential energy to do more damage to you and your family members than that stick of dynamite. Suppose you see a problem ahead of you that you want to brake for. You may not be able to stop your car if you cannot prevent the vehicle to your rear from pushing you into the problem! You cannot control your front zone if you do not control your rear zone. In order to control your rear zone you need to have time and information. Checking your mirrors can give you the information. And the sooner you check them, the more time you will have to solve a problem.

Which Scene Do You Want?



You are approaching a construction site on the interstate highway. You begin braking. When would you like to know that there is an approaching 18-wheeler closing your rear zone? The top photo would give you more time and space to get the driver to slow down.

Rear Zone Conditions

The rear zone is either open, closed or unstable.

- When a vehicle is at least 2 seconds away from your rear bumper, and not gaining on you, your rear zone is **open**.
- When a vehicle is closer than 2 seconds, your rear zone is **closed**.
- When a vehicle is closing in on you, your rear zone is **unstable** and in a very dangerous condition.
- When there is less than 12 seconds of sight distance to the rear, the rear zone is closed.

Responding to Zone Conditions

Practice will develop the habit of evaluating and controlling your rear zone.

Open Rear Zone: You want to keep monitoring your rear zone to detect any change in movement to your rear. You can usually do this by using your peripheral vision while you are searching your front and right-front zones. When you see a zone change affecting any of your three front zones, you will need to direct your central vision into the mirror to evaluate its condition.

Closed Rear Zone: When the rear zone is closed you need to **pay more attention to your front zone.** You need as much communication time as possible to alert the driver in back of an impending braking action. Take note of how the driver to your rear responds to minor braking actions as they occur. This could tip you off to situations when there may be a drowsy, distracted, or intoxicated driver. The sooner you see an unstable rear zone the better your options will be.

Unstable Rear Zone: When you first detect a vehicle closing in on your rear zone, you have no idea as to how that driver perceives your vehicle. This is a critical time for you to become alerted to the potential danger. When you have a closed front zone and an unstable rear zone, you can heighten the approaching driver's awareness by tapping your brake pedal as you are braking to activate the brake lights in a flashing manner. This will be more noticeable than a steady brake light. Keep lane change options in mind for an escape path if the driver is not stopping. If you feel the driver is still gaining too rapidly, you can begin an earlier and more forceful braking action well ahead of your intended stopping point. Then, when the driver in back realizes that he is closing in on you, you will be able to release some of the braking force to continue moving and create more space.

When you are monitoring your rear zone, make several quick eye movements into the mirror while continually evaluating your vehicle's path of travel. You never want to fixate your search into the rearview mirror. Several brief glances of a second or less, alternating rear to front searching, is more effective and helpful to a solid solution to the problem. Many drivers, when they see a tailgater intimidating them, fixate dangerously on the rear zone at the expense of not seeing something that causes them to make an abrupt stop—which is the last thing you want to do when you have a tailgater.

Is this Open or Closed?
In order to answer accurately you need to know your speed.

The **photo above** shows a car that is about 100 feet to the rear. If the car keeps that distance, and we are traveling at 30 mph, the rear zone is open. If we are traveling at 50 mph with the same distance, the rear zone is closed.*

The **photo above** shows that the car is now about 30 feet to the rear. Imagine how little time you would have if you did not view the rear mirror until the car was that close!

How to Measure Rear Space

We cannot do calculations while driving. We can however, learn how to easily measure the number of seconds a vehicle is to our rear. Here is how to do it: While driving with a car to your rear, look ahead for a shadow cast across the road. Take a guess as to how many seconds away the car following you is. Look into your rearview mirror as the rear of your car just leaves the shadow. Begin counting 1001, 1002 (while you are looking ahead). Glance back at the number of seconds you guessed to see if the front of the car to your rear is out of the shadow. If it is just coming out of the shadow, you made an accurate guess. If not, take another guess and use another measuring point. After you do this ten or twelve times at various speeds, you will be extremely accurate in judging what the rear zone condition is. You will increase your sensitivity to how you can take control of situations to the rear at a time when the risk can best be reduced.

*** To do the math for page 44**

A vehicle travels 1.467 feet per second for each mile per hour of speed. Round off 1.467 to 1.5. Multiply mph of speed by 1.5 to get feet per second of travel. A car traveling at 30 mph x1.5 = 45 ft/sec. In our example to the left, at 50 mph x 1.5 the car is traveling at 75 ft/sec. If the car was 100 feet to the rear, at 50 mph it is less than 2 seconds away, therefore it is a closed rear zone.

When You are Most at Risk

You are at the greatest risk of having someone crash into you when you're stopped at an intersection. The higher the speed limit the more potential for damage. Stopping for work zones, toll booths, and for other traffic delays on limited access highways leads to the most fatal crashes. Your only defense begins by knowing what is happening to your rear as soon as possible. Here are some general conditions when it is very critical to view the rear mirror.

After Seeing a Zone Change

After you see a LOS-POT Zone Change, check the rearview mirror. You can gain control of the rear zone by immediately knowing what the rear zone condition is. You need to know if the rear zone is open, closed or unstable.

Before and After Braking

When your foot goes onto the brake pedal, your eyes should go to the rearview mirror. The earlier the mirrors are checked, the sooner a rear zone condition can be identified. This leads to more available options, which contribute to better decision-making with lower risk, and it gives time to communicate to the driver in back.

While Stopped In Traffic

A high percent of all crashes are rear-enders. You and your family are most vulnerable when the car is stopped in traffic. The faster the traffic flow is moving, the greater the risk of serious injury when your vehicle comes to a stop. Continue to monitor the rear zone until at least two vehicles are stopped in back of you. When at least two cars are stopped to your rear, they will act like inertial sand barrels to absorb the force of impact.

Fast Closing Vehicles

When you see a fast-closing vehicle behind you, tap your brake pedal to flash the brake lights and get the driver's attention. The sooner you see the closing vehicle, the more time you will have to communicate, which is why you need to check the rear zone as soon as you see a reason to reduce your speed.

LOS Blockage to the Rear

There are two major causes of a LOS blockage to your rear zone. A vehicle following closely to your rear will prevent you from detecting vehicles that will be pulling alongside you. When you are stopped around a curve, you may not have a good sight distance to your rear. Traffic approaching from the rear may not be able to see your stopped vehicle. The sooner you begin your braking the more time you have to communicate.

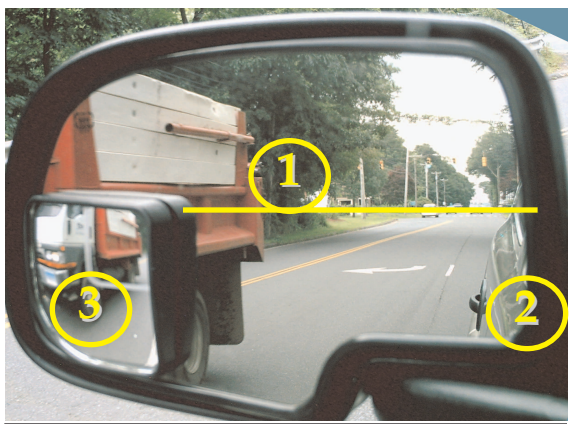
Before and After Making Turns

Check your inside rearview mirror to get an update of rear zone conditions immediately before and after entering a new traffic pattern. Look for vehicles that are approaching extremely fast.

To Check Rear-Side Zones You Need Effective Side Mirrors

Using the Zone Control System helps you to have the ability to quickly receive accurate information from either rear-side zone. Before you can consider whether you have an option for improving your lane position, or the ability to change lanes, you need to know the condition (present and future) of the left or right rear zone. The more lanes of travel, the greater dependence there is upon the outside mirrors. If you need to make a lane change, then the more time you have to process information from the rear side, the less risk and less stress you are subjected to. If you are in a traffic flow that has more than two lanes, the risk of changing lanes increases with each additional lane. For example: if you are leaving a toll booth and the route direction requires you to move five lanes over, that high risk maneuver demands exceptional mirror usage.

Adjusting Outside Rearview Mirrors



3. If you have a SmartView Mirror, (or other convex mirror) place it in the lower outside corner of your outside mirror, as illustrated here.

Begin with your head directly aligned with the steering wheel.

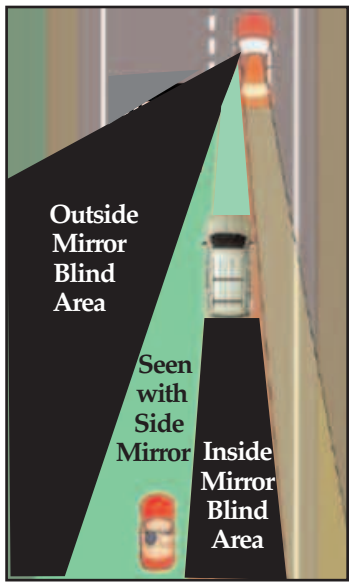
1. Set the up and down tilt of the mirror level to have the horizon appear near the center of the mirror, as the graphic line shows.

2. Have the in and out tilt adjusted to see the side of your vehicle and see a vehicle to the rear. This setting is important for making lane changes. You are able to use one mirror to see traffic directly to your rear as well as being able to see traffic in the adjacent lane you intend to enter.

Both the Inside and Outside Mirrors have Blind Areas

The outside mirrors on vehicles have a blind area that could conceal a passing vehicle. To overcome it, you need to make a head movement over your left shoulder, or move your head eight inches forward while glancing into the outside mirror. Or, you can fix a convex mirror onto the outside mirror that will totally eliminate the blind areas.

The inside mirror has blind areas created by cargo, head restraints, passengers, and traffic. Rear traffic hides vehicles that are fast approaching to pass you.



A high risk maneuver is lane changing.

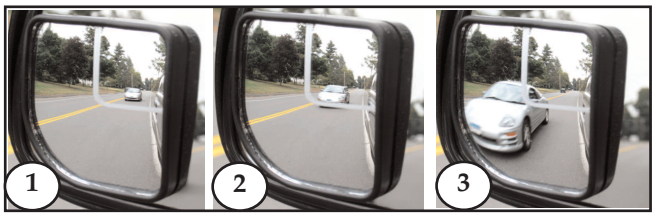
Anytime a vehicle is entering or leaving a traffic flow, it becomes many times more risky than traveling within the traffic flow. The use of the **sideview mirror is essential** to planning and executing a safe lane change.

Making a Safe Lane Change

1. Check the sideview mirror in the direction you intend to move to find where your opening will be. 2. When you have an opening, signal and move to LP 2 for a left lane change, or LP3 for a right lane change, and recheck your opening. If you have a SmartView Mirror® you check that; if not, you need to make a head movement check of the mirror's blind area. 3. Enter LP3 or LP2 and recheck side mirror.

The SmartView Mirror® is a Specially Designed Mirror with a Safe Box

If your vehicle is equipped with a convex mirror, such as the SmartView Mirror® (shown below), you are able to clearly see if there is a car in your vehicle's blind area. *It will also show you whether there is a vehicle that will be entering your blind area*. Or, when the side zone is closed, the SmartView will show when it will be clear for you to enter that zone. Typically, convex mirrors will make vehicles appear smaller than they are and it is difficult for drivers to judge distance. However, that problem is eliminated with the SmartView, which has an etched "safe box." If a car is in the box, (as shown in photo 1), and stays in the box, it is safe to move in front of it. If a car is leaving the "safe box" (photo 2), it is not safe to move there. Notice in this series of SmartView Mirrors how we see a car coming out of the "safe box." In photo 3, the car is out of the box and would be in the blind area of your flat mirror; with the SmartView it is clearly seen!



To find where you can purchase the SmartView Mirror® email: info@NIDB.org

Backing is a High-Risk Task

In many corporations, 40-50 percent of all of their fleet crashes occur when the vehicle is backing. Yet, the amount of time a driver spends backing is usually less than 1 percent of the total driving time.

The reason most backing crashes occur is because the driver cannot effectively see to the rear of the vehicle. A driver cannot see the pavement within 45 feet to the rear of the vehicle. Therefore, any number of obstructions lying on the pavement can go undetected. Children are killed each year by parents backing the car over the child playing to the rear of the vehicle!

When backing is required, check to the rear of the vehicle before getting into it. Use convex mirrors.

To reduce risk while backing:

- Avoid backing if possible.
- If backing is necessary, do it when you first arrive.
- Back the least amount of distance (use reference point).
- Back slowly, inch by inch.
- Continually check all four corners of the vehicle as well as directly to the rear.
- Avoid prolonged stops before backing.
- Look over your right shoulder, and use all three mirrors without fixations of more than 2 seconds.
- Use convex mirrors that show your rear tires.
- Always avoid backing into a traffic flow (don't back out of driveways; use turnarounds).

Reduce Risk: Back Into a Perpendicular Parking Space!

1. Side Position
Get 2-3 feet from the parked cars. Look for cars that may back into your car.

2. Forward Position
As the driver of the car, your body will appear to be aligned in the center of the space. In a van, align your body with the second line of the space (**a**).

3. Select 45-Degree Target
Use the outside edge of the driver's side mirror to align your vision to a stationary object. Put left signal light on.

4. Creep and Turn Wheel Fast
Check for traffic. Aim for the target.

5. Use The Least Forward Movement
Try to move the car as little as possible to get on target. This will prevent cars from driving to the rear of your car while you are attempting to back up.

6. Line Up Car With Space
Before straightening the tires, look over your right shoulder, or check the convex mirror, for alignment to the space.

7. Shift To Reverse
Shift to reverse after the back of the vehicle is aligned to the space and the tires are straight.

8. Back To Rear Pivot Point
This is when the corner of the parked car is in your rear window's blind spot (see illustration to the right).

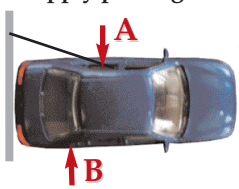
9. Inch and Turn Wheel Fast
Once the car is at the pivot point, move the car inch by inch and quickly turn the wheel fully to the right.

10. Get Car Straight In Space
Observe when car is straight in the space.

11. Inch, Straighten Tires
Inch the car slowly back while you quickly straighten the tires.

12. Back To Rear Reference Point
Check your rear reference point by glancing over your left shoulder. You should see the rear line appear in the middle of your rear-side window (see illustration below).

13. Apply parking brake.



A = where you will see the Rear Reference Point.

B = the Rear Pivot Point.