

# **Mirror Usage and Blind Spots**

**Reference Guide and  
Test Questions**

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## **Mirror Usage and Blind Spot Reference Guide**

Mirrors are an indispensable tool for all school bus drivers. This reference guide will give the bus driver instructor a thorough understanding of all the issues that are demonstrated in the accompanying DVD.

### **The video will be divided into 4 separate parts:**

- Part 1 - Seat Adjustment
- Part 2 - Mirror Adjustment
- Part 3 - Blind Spots
- Part 4 - 5 Point Mirror Check

### **PART 1 SEAT ADJUSTMENT**

The driver, Matt Sanchez, a state certified school bus instructor, will discuss and demonstrate proper seat adjustment. He will also discuss the negative consequences, when a seat isn't properly adjusted.

1. Before adjusting mirrors, the seat has to be properly adjusted.
2. Arm Positioning: Arms must be at the 3 and 9, or 2 and 10 o'clock position on the steering wheel.
3. There should be a slight bend in the arm; comfort and control of the bus results from this positioning.
4. Foot placement should be comfortable and fit the size of the driver. The driver shouldn't have to strain or reach to hit the brake or accelerator.
5. Back should be flat and rest against the back of the seat. Back support is important. It reduces driver fatigue and maximizes control of the vehicle.

### **PART 2 MIRROR ADJUSTMENT**

#### **The importance of the adjustment of mirrors:**

1. Proper mirror adjustment is a major factor in reducing collisions, injuries and fatalities.
2. Each driver must take the time to properly adjust the mirrors of the bus they are operating.

#### **The left flat mirror**

1. There are 3 main things the driver must be able to see: 1 inch of the tire, the rear tire and 200 feet behind the bus.
2. The bus driver must be able to see a narrow strip of the bus measuring about 1". Seeing 1" of the bus helps the driver determine alignment. It compares the plane of the vehicle with the ground reference.
3. When the driver is able to see the rear tire touching the ground, the driver can then determine the location of the rear tire. This means that the driver, by being able to see the rear tire, can avoid coming into contact with any problem objects.
4. Seeing 200' behind the bus allows the bus driver to identify problem objects.
5. Safety tip for left flat mirror. When the left flat mirror is properly adjusted, the driver will be able

to respond to a dangerous situation, for example, kids too close to the bus.

### **Proper adjustment of left flat mirror**

1. Start with a mirror out of adjustment. The driver then adjusts the mirror correctly. This is what the driver should see.
  - a. The driver should see 200' to the rear of the bus.
  - b. The driver should be able to see the rear tire touching the ground.
  - c. The driver should see 1" of the side of the bus.

### **Left side convex mirror**

1. Left convex mirror is located just below the left flat mirror.
2. Driver should be able to see the following:
  - a. A little bit of the bus as a reference.
  - b. The area on the side of the bus.
  - c. This mirror is useful when making a lane change, seeing cars on the side of the bus.
  - d. The convex will also allow the driver to see students on the side of the bus.
3. When the convex mirror isn't adjusted properly the driver sees too much of the bus, or too much of the ground, or too much of the sky.
4. The convex mirror should be adjusted to maximize the area around the bus and on the side of the bus.
5. When the convex mirror is properly adjusted, the driver will see the following:
  - a. The driver can maximize the area that they can see around the side of the bus.
  - b. The driver can see a small sliver on the side of the bus.
  - c. The driver can see a small portion of the front and rear tires.
6. When properly adjusted, the driver can see kids near the front or rear tires of the bus.

### **Overhead Mirror**

1. Any mirror on the bus helps the driver make good decisions. This is particularly true of the overhead mirror.
2. The interior or overhead mirror gives drivers a clear view of the interior of the bus. It also allows the driver to see the rear and central entrance, the exits and any step wells.
3. The interior mirror is used predominantly to monitor the students behavior on the bus.

### **Cross-view Mirror**

1. The cross-view mirror allows the driver to see the area in front of the bus.
2. The driver, when looking into the cross-view mirror, should maximize the area that can be seen in front of the bus and minimize the amount of the bus that is seen.
3. Proper mirror adjustment of the cross-view is needed in order for bus driver to be able to take advantage of the viewing area inside of the cross-view mirror.

4. If the mirror is adjusted properly, blind spots in the mirror can be reduced; kids that are in front of the bus or at the sides of the bus, can be seen with a properly adjusted cross-view mirror.
5. Kids that drop a book in front of the bus or at the sides of the bus will be hard to see. However, the properly adjusted cross-view mirror will be able to pick them up.
6. If you are not sure how to properly adjust the cross-view mirror, check with your supervisor.

## **Right Side Mirror Zone**

This section will cover the mirrors on the right side of the bus.

### **1. Right side convex mirror**

- a. Driver will want to see a small part of the side of the bus as a reference point.
- b. Driver will also want to see the area on the side of the bus.
- c. Driver will be able to see approaching vehicles on the side of the bus. This is particularly valuable when the bus changes lanes in traffic.
- d. Driver will be able to see students walking too close to the side of the bus.
- e. Flat mirror may not be able to identify students walking too close to the bus.
- f. Proper adjustment of convex is critical for the bus driver to notice objects too close to the bus. The flat mirror might not be able to pick up these objects.

### **2. Right Flat Mirror**

1. Important features of right flat mirror.
  - a. Properly adjusted right flat mirror should reveal 1" of the side of the bus.
  - b. Seeing 1" of bus will help driver to determine alignment by comparing plane of vehicle with a ground reference.
  - c. When the driver is able to see the right rear tire touching the ground, the driver can determine the location of the rear tire and whether the bus will come into contact with any problem object. (example in video is the curb.)
  - d. Seeing 200' behind the bus will allow the driver to identify problem objects, including other traffic or any type of problem objects within the safety circle.
2. An important caution: Some mirrors must be adjusted by bus mechanics, not school bus drivers.

## **Part 3 - Five Point Mirror Check**

1. When a bus is stopped at a school site, a loading zone, or any area where students are milling near the bus, the driver must be aware of the location of the students. In other words - the bus driver must be aware of anyone in or near the danger zones.
2. Two Important Concepts for the 5 Point Mirror Check.
  - a. The driver must understand the mirror zones of the bus.
  - b. The driver must understand the protocol for the 5 point mirror procedure.
3. There are 4 distinct mirror zones

- a. The left mirror zone; this includes the left flat and convex mirrors.
- b. Interior mirror; predominantly used for looking at the students.
- c. Front mirror zone; this includes the cross-view mirror and is used to locate any students that have gone in front of the bus.
- d. Right Mirror zone; this includes the right flat and right convex mirrors.

4. These mirror zones are going to be used for drivers to look inside these mirrors to “clue us in” that something is going on inside these mirror zones.

### **The 5 Count Mirror Procedure**

1. In the first procedure, the school bus will be moving to the left.
  - a. Start the 5 count mirror procedure in the left mirror zone.
  - b. First: the driver will look in the **left mirror zone**.
  - c. Second: the driver will look into the **interior mirror zone**.
  - d. Third: the driver will look into the **front mirror zone**.
  - e. Fourth: the **right mirror zone**.
  - f. Fifth: the driver will return to the **left mirror zone**.
  
2. The concept of the five point mirror procedure is to look for specific things inside the mirrors that could be problem objects that the bus could hit.
  
3. For the second procedure the school bus will be moving to the **right**.
  - a. Start the 5 count mirror procedure in the right mirror zone.
  - b. First: the driver will look in the **right mirror zone**.
  - c. Second: the driver will look into the **interior mirror zone**.
  - d. Third: the driver will look into the **front mirror zone**.
  - e. Fourth: the **left mirror zone**.
  - f. Fifth: the driver will return to the **right mirror zone**.
  
4. Make sure that this is a process and not just a single mirror check procedure.

### **Part 4 How to Avoid Blind Spots**

1. Driving a school bus means that drivers must deal with many issues simultaneously.
2. Situations may arise that demand a driver’s attention. ( a student inside the danger zone)
3. A driver must know how to prioritize these situations. Drivers can never afford to lose their focus.
4. Many bus fatalities and serious injuries takes place because of blind spots in mirrors. The following is a list of the leading causes of accidents incurred by driver’s not taking into consideration blind spots in the mirrors on their school bus.
  - a. First, most of the time drivers are looking at mirrors facing to the rear of the bus. As a result the blind spots are not as evident.
  - b. Second, notice the flat mirror covers a large field of view at the front of the bus. You can’t see anyone behind the mirror.

d. Third, the driver must be aware of how wide an area of view that the flat mirror takes up. ( an example in the video shows the instructor using guide ropes to demonstrate this concept)

e. Drivers should try and visualize the blind area that the mirrors are covering. This may include: approaching a loading zone, a school drop off zone, or a busy intersection.

5. Preventative steps to be taken to avoid blind spots.

a. Observe positions of pedestrians or students when approaching an intersection or any other busy area.

b. Don't be distracted by traffic. Be aware of blind spots in the mirrors.

c. Be patient and take the time to identify blind spots.

d. Observe the entire area that you are approaching; kids and traffic can cause distractions.

e. Always prepare for the unexpected. Anticipate the possibility of a student unexpectedly appearing in an area that the mirror is covering.

f. A driver stops at an intersection and it appears there are no problem objects. When the light turns green the driver hesitates a few seconds before pulling into the intersection. (In the video example a pedestrian hidden behind the flat mirror walks into the intersection) The morale of this story: Leave a margin for error.

6. Driver positioning and its impact on blind spots

a. Sitting in a rigid position prevents driver from seeing around the mirrors blind spots.

b. When the driver moves his body from side to side, he's allowing himself to look around the mirrors and see a problem object.

c. School bus drivers must constantly move from side to side. This will allow them to partially see around their mirrors.

d. By remaining static and not moving, you can't see what's in your blind spots.

## TEST QUESTIONS

1. Seat adjustment is set by the bus manufacturer and should never be changed.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

2. Which one of these answers is correct when the flat mirror is properly adjusted?

\_\_\_\_\_ a. The driver must be able to see 1” of the side of the bus.

\_\_\_\_\_ b. The driver must be able to see the rear tire.

\_\_\_\_\_ c. The driver must be able to see 200’ to the rear of the bus.

\_\_\_\_\_ d. All of the above

3. The convex mirror with it’s wide viewing angle allows the driver to see students in front of the bus.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

4. The driver should be able to see 200’ to the rear of the bus. Which mirror will be best suited to allow them to do this.

\_\_\_\_\_ a. The interior mirror

\_\_\_\_\_ b. The cross-view mirror

\_\_\_\_\_ c. The flat mirror

5. Blind spots can be avoided by school bus drivers if they always maintain a rigid body position. This will keep them in perfect alignment with the mirrors.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

6. The 5 point mirror check doesn’t have to be used if the driver approaches a loading zone and notices that there is no traffic in the area.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

7. The flat mirrors on the bus are so accurate and cover such a wide area that when students are very close to the bus, it's not necessary to use any other mirrors to monitor the closeness of students to the bus.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

8. Which mirror should the driver be most concerned about when they encounter blind spots?

\_\_\_\_\_ a. Convex

\_\_\_\_\_ b. Cross-view

\_\_\_\_\_ c. Flat

9. It's important for the driver to be able to see the rear tire in the flat mirror because that will allow the driver to notice if he's too close to a problem object.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

10. The convex mirror with its wide angle must be used with a caution because distant objects may actually be closer to the bus than they appear in the mirror.

**True** \_\_\_\_\_

**False** \_\_\_\_\_

## **ANSWERS**

1. False
2. D
3. False
4. C
5. False
6. False
7. False
8. C
9. True
10. True