

# **Safety Techniques for Tying Down Wheelchairs**

**Reference Guide and  
Test Questions**

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Video Communications  
See us on the web at [safetyvideos.org](http://safetyvideos.org)  
Phone: 800 288-5343  
Fax 800 482-3299**

Special needs bus drivers need to perform many different tasks. They must learn to drive a bus carefully always keeping in mind the needs of their students. They need to be skilled in the operation of a special needs bus. When emergencies occur they must know how to respond quickly and calmly.

Another important task that all bus drivers must be skilled at is tying down wheelchairs. During the course of the we video demonstrate the skills that are needed to make sure that special needs students and their wheelchairs are adequately and safely secured during transportation to and from schools. We will also emphasize what has become one of the most important health issues for special needs bus drivers -- How to protect your back from injury when tying down wheelchairs.

This Leaders Guide will be divided into 4 sections: The first section will demonstrate the operation and features of wheelchairs. Special attention will be focused on the importance of the condition of wheelchairs before being placed on a special ed bus.

The second section will feature a bus driver instructor teaching a new bus driver the basic skills for tying down wheelchairs.

The third section will go into the field with several bus drivers and show them working with students as they tie down wheelchairs during a normal school day. Proper back posture for bus drivers will be emphasized during this section.

The fourth section will cover special situations. This will include a demonstration of removing tie downs during an emergency situation. This section will also emphasize the

importance of understanding the students disabilities as it relates to tying down their wheelchairs.

## Part I, Operational Techniques for Wheelchairs

Every special needs bus driver will need to know how to operate a wide variety of wheelchairs. In addition they will need to know how and where to place tie downs. In this section we will discuss these issues.

Let's begin by taking a look at several different types of wheelchairs and find out what special needs drivers will need to know in order to safely operate them.

The first concern of a driver is to evaluate a wheelchair, to make sure it's safe to place on the bus. An important point to remember is this, it's the responsibility of the parent or guardian to provide a safe wheelchair. However, it's the responsibility of the driver to determine that the wheelchair is in good enough working condition to be placed on the bus.

Following is an important checklist to make sure the wheelchair is safe and in good working condition:

A good place to start is with the brakes. Open and close the brake levers to make sure they work properly. Test the chair to make sure when the brakes are engaged the chair doesn't move.

Next do an overall check of the chair to make sure there are no loose parts or damaged structures on the wheelchair. This is particularly important if you are receiving a new student and you aren't familiar with the chair.

Check the seat belt by latching and unlatching it. Make sure it's secure and the student is safe. Remember, these students will be riding inside a moving bus and the seat belt is an integral part of their safety.

Make sure that the seat and the back of the frame are securely attached to the frame of the wheelchair. Make sure that the footrests are working properly and will fit the students needs.

Make sure that the headrests are properly positioned. Also the lap trays, book bags or other extraneous items should be properly secured when students are riding on the bus.

Another issue to look out for is to make sure that the wheelchair size is appropriate to the size of the student.

When checking out an electric wheelchair here are several important points to keep in mind:

First, engage the gears to make sure they are working properly.

Next do an overall wheelchair check to make sure the wheelchair is in proper working condition and make sure to check the battery to make sure it's charged.

Make sure to turn off the battery once the wheelchair is loaded onto the lift.

Keep this important point in mind, each new wheelchair has it's own idiosyncrasies. Talk with parents, guardians and students and let them acquaint with any unique features of

their wheelchairs. Also, contact the manufacturers of the wheelchairs if you still aren't sure about their features.

The special needs bus driver must be thoroughly familiar with how each wheelchair functions. The safety of the special needs student will depend on it.

This brings up another important point. Because there are so many different types of wheelchairs, there is no one standard for determining where on the frame of the wheelchair tie downs should be placed.

Your best course of action is to follow the guidelines set down by the manufacturer. Because of the high cost of a wheelchair you don't want to accidentally damage the frame when applying tie downs.

If you aren't sure about any of these issues don't take them for granted. Go to your supervisor and tell them your concerns.

The safety of the students is directly connected to the safe condition of the wheelchairs. It's your job as a bus driver to make sure that all of these standards are in place before transporting your students.

## **Part II, Training Session: Skills for Tying Down Wheelchairs**

In this section we will discuss the proper techniques for tying down wheelchairs. In the video, a bus driver instructor will demonstrate these techniques to a bus driver trainee.

Now let's take a look at why tie downs are so important to the safety of special needs students. A wheelchair being transported on a school bus must be secured in a way to guarantee that it will be safe during transport. Here are several reasons why this is important:

Buses, even special needs buses, occasionally are required to make sharp turns or sudden stops. A properly secured wheelchair will not leave the ground when one of these events occurs.

The movement of a bus can cause a slight rotation to a wheelchair. For students with low muscle tone or little upper body strength this can cause an injury. A properly secured wheelchair can lessen the chance of this happening. Wheelchairs that are properly secured can support the chair in case of a rollover or other types of emergency situations.

Once drivers are aware of the safety role that tie downs play they will focus their attention on their proper securement.

A good starting point for the demonstration of tie down procedures is to make sure you use the correct securement system. New federal standards mandate that securement systems must include the following:

All wheelchairs must be forward facing.

Each wheelchair must be secured with at least four tie downs, two in the front and two in the rear.

In addition a safety strap must also be used to prevent students from being thrust forward.

However, since not all buses meet these new standards, read the owners manual to determine the proper securement system for your bus.

The bus instructor starts the training session by telling the trainee to remove the tie downs from the side pouches. When not being used, the tie downs should always be safely stored.

In the video, the instructor explains how to insert the tie downs into the floor railings. He begins with the front tie downs.

You have a gold piece that goes up or down. We're going to use that for when we take the tie down out of the floor. But to put it into the floor, basically all we want to do is line this up with the floor, you see how the rounded part fits right into the floor, just line that up and (gold piece) slide it into place. It locks itself into place. Always make sure that it is locked in place, because if it is not, when you go to tie it down and you put pressure, it could come out and you could have an injury.

Once the tie down is securely fastened to the floor railing you can begin to wrap the strap around the chair. This is done by wrapping the strap around the strongest part of the main frame of the chair. Often this is a welded point or a bolt.

In the video the instructor demonstrates the proper technique for safely tightening the front tie down:

What were going to do here is tighten this (strap) But this is very important, when we tighten it we really want to consider the positioning of the back. Because we don't want to throw our back out and were going to be putting tension on this strap. So keep in mind your back position.

I chose to do the front (tie downs) first, and that's because I want to have a little bit of tension on the chair before I do the back. The back tie downs have a ratchet style, with the tension on the front, we will be able to get the backs that much more tighter.

Once the locking device is set into place the instructor explains to the trainee how to properly adjust the rear tie downs.

We want to put this far enough back to try and get a good angle up to the mainframe. (Angle tie downs at a 45 degree angle from the floor to the wheelchair.) The idea here is to get a straight shot from the floor to the chair. without having it hit the chair. We don't want to go through the spokes, we don't want to go to a point on the chair that is on the bottom because that's not part of the main frame.

The instructor begins to attach the rear tie downs by wrapping the strap around the main frame. Notice in the video the angle of the strap, it is not in any danger of being snagged by obstructions on the wheelchair.

Also, notice how the instructor is cinching the straps into place by ratcheting them until there is no slack left in the straps.

It is very important to remember that there is a possibility of tightening the chairs to much, we don't want to do damage to the chair at all. So we want to crank it so its tight and the wheelchair does not move, yet we don't want to do damage to the wheelchair.

Tying down a wheelchair puts stress on the lower back. The instructor advises the trainee about how to minimize back stress.

It isn't always possible to have a perfect position with the back. Sometimes you have to so the best you can do. Sometimes you have a very awkward positions, if it takes lying down on the floor you can do that. See how I am up against this seat here and that is



helping me place my back in a nice straight position. So always just keep in mind the position of the back while your doing this because what you don't want to do is have an injury.

You must always make a final check of the chair before being certain that it is secure.

The final tasks needed to complete the tie down of the wheelchair is attaching the safety belts.

In the video, the instructor shows the trainee that each end of the safety belt is inserted into the floor railings. After adjusting the safety belt, the other end of the safety belt is inserted into the locking device of the first belt.

It is very important when attaching safety belts to follow the guidelines set down by the bus manufacturer. It is important to remember that each securement system may have different methods of attaching their safety belts or tie downs.

Now that we have seen a training session on how to secure tie downs, let's turn to see how it's done in the field. As you will soon see there are many other issues to consider.

### **Part III, Tying Down Wheelchairs in the Field**

As discussed in the prior section, there are many component parts to tying down wheelchairs. Following is a list that shows how a bus drivers accomplishes this task:

Place the tie downs into position prior to loading students

Place students who will be off loaded first closest to the lift

Wheelchairs must be secured by at least four tie downs

Two tie downs in the front

Two tie downs in the rear

### **Front Tie Downs**

Start with the front tie downs

Secure locking device into floor track or brackets

Attach straps to strongest part of the tie frame

Do not cinch straps too tight or you will damage the frame

Maintain proper body posture when taking slack out of straps

### **Rear Tie Downs**

Insert securely into bracket

Straps should be at a 45 degree angle

Ratchet until there is no more slack in tie down strap

Test chair to make sure it is secure

### **Safety Belts**

Insert one end of safety belt into railing

Insert other end of safety belt into the locking device

Adjust safety belt so that the belt fits snugly

Make sure that wheelchairs are safely secured

## **Part IV, Special Circumstances**

When an emergency situation occurs, there isn't enough time to remove tie downs. The bus driver needs to get her students off the bus as quickly as possible. She does this by using a razor knife to slice quickly through the tie down straps. This immediately frees the tie down straps and allow for a more rapid off loading of special needs students during an emergency. Make sure you know this technique because one day you may be required to use it.

Special needs drivers must also be aware of the types of disabilities of their students. This has a direct influence on how to safely tie down their wheelchairs. The following examples will demonstrate why it is so important to be aware of the disabilities of your students.

This young student was born without any legs. The students IEP has indicated that when attaching the safety belt from the lift or when attaching any other safety belts extra care must be taken to make sure she is properly secured.

This is another situation where understanding the student's disability is critical. This special needs student has a severe skin condition. Anything that comes into contact with his skin will tear his skin. Extreme caution must be exercised.

There is an important point here. You the special needs bus driver should take the time to be aware of the disabilities of each one of your special needs students. By doing this you will be able to provide the level of safety that is needed when working with special needs students.

The job of being a special needs bus driver is not easy. As this video indicates you must master many skills. But keep this important point in mind. You are the link that makes it possible for these students to safely get to school. Without your help and conscientious effort these special needs students would face only obstacles. Instead they are greeted by smiles and affection. Keep that in mind as you continue to perform your job as special needs bus drivers.

A The safety belt provides protection to special needs students. In the event of quick stops or sudden swerves the safety belt will help prevent potential injuries.

B In this case the driver has completed tying down the front and rear tie downs and is ready to attach the safety belt. She inserts one end of the safety belt into the floor track making sure it fits snugly. Next she carefully stretches the safety belt across the body of the student. She is careful not to make the belt too tight. The student needs to have room to move around freely.

C After the belt is properly adjusted she places the other end into the locking device on the wall of the bus. She checks it to make sure it's secure. The student's wheelchair has now been properly secured.

D There is one additional point we think is worth mentioning. There are many different types of securement systems. Each one has to be learned separately. However, the principals of tying down wheelchairs are the same. Follow these principals and you will be able to safely secure your special ed students.