



Kansas RTAP Fact Sheet

A Service of the Kansas Rural Transit Assistance Program — for Transit Agencies



How to Secure a Wheelchair

The Essential Steps

By Anne Lowder

Securement of a wheelchair in a vehicle is not a cookbook approach. Not all chairs are alike, and several considerations should go in to proper securement.

Introduction

This article will outline the essential steps of the securement process recommended by Q'Straint. Many transit vehicles in Kansas use Q'Straint securement systems. The article will discuss on-boarding a passenger in a wheelchair and what to look for even before the wheelchair is placed into the vehicle. Then it will cover what to do when the chair is inside the vehicle.

Load the Mobility Device into the Vehicle

To begin, the wheelchair with the seated passenger needs to be loaded into the vehicle by using the ramp or lift. It is during the loading process (while the mobility device is outside the vehicle) that you should take time to look carefully at the wheelchair and determine attachment locations for securement devices. The locations are easier to find when the wheelchair is not yet in the confined area of the vehicle.

Another useful tip that will make it even easier for you to secure the wheelchair in the vehicle is to attach webbing loops, when needed, to the wheelchair while it is on the lift. Webbing loops provide attachment points.

Place the Mobility Device in the Securement Area

When you place the wheelchair in the securement area of the vehicle, make sure the shoulder belt is located behind and above the passenger's shoulder so it can be pulled down for proper securement. Q'Straint states in its training and in its owner's manual that "retractor-based systems are designed for forward-facing securement only." This means your passengers and the wheelchair must always be facing towards the front of the vehicle to be properly secured using their devices.

Q'Straint offers interactive training webinars.

Upcoming webinars are
March 26, April 7, May 14,
June 18 and July 7.

You can find the schedule and register at
<https://training.qstraint.com/training-webinars>

For your safety, once the mobility device is in the securement area, power down the wheelchair or apply the wheel locks on a manual chair. This keeps the chair from moving and possibly causing injury to you during the securement process.

Placement of Retractors in the Floor Anchorages

The Q'Straint securement system consists of four retractors that should be placed in the floor anchorages of your vehicle. Q'Straint has tested the securement effectiveness of the retractors with two placed in the rear and two in the front. The rear and front retractors should be placed at specific points on the tracks in relation to the frame of the wheelchair.

In the rear, place the retractors on the inside floor anchorages if you are running four strips of track the length of the vehicle, or if you are using SNC anchorage. If your track runs width-wise at the front and rear of the securement area, you need to place them inside the frame of the wheelchair.

According to Q'Straint engineering, this is going to do two things. First, the rear retractors are stopping the forward momentum of the wheelchair. Second, logistically, going narrower than the frame will allow you an easier path to the attachment point. If the securement points are wider than the chair, you would find it difficult to get to an attachment point without going through the wheels of the chair. In the front, you want to do the opposite. You want to place the front retractors on the outside set of track or anchorages in this layout or wider on the frame of the wheelchair when running track width-wise in the vehicle. These retractors stabilize the wheelchair. If you were to place the retractors narrower than the frame of the wheelchair you would run into the legs of the passenger when trying to attach to the wheelchair.

Determining Securement Locations on the Wheelchair

There are three essential steps here. When attaching the S/J hook of the retractor to the frame of the wheelchair, aim for the following three principles:

1) Attach to a Solid Frame Member of the Mobility Device

First, identify four solid frame members on the wheelchair. Solid frame members are attachment points that look like they are sturdy enough to withstand a crash. Avoid attaching to any part of the chair that is plastic, removable (such as footrests or wheels), or bolted together (unless it is a hardened bolt identified by raised lines of three or six).

It is best to attach higher up on the frame of the wheelchair, ideally as close to the base of the seat as possible, to achieve the correct belt angle.

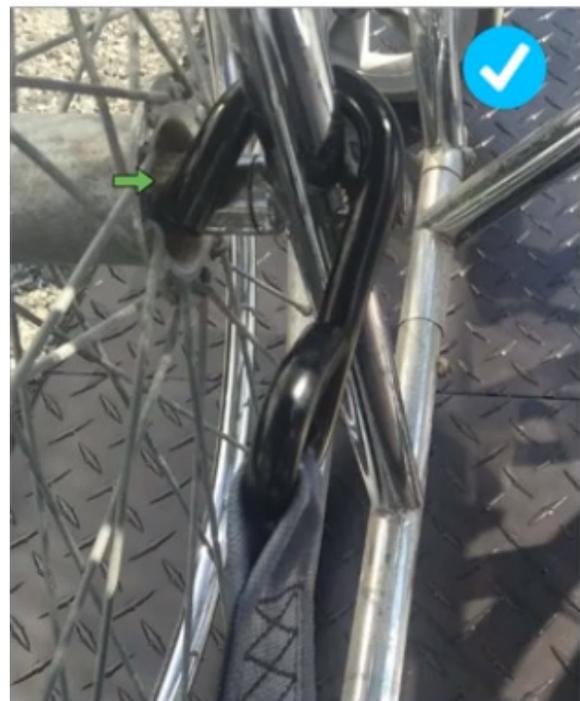
2) Use a Direct Path from the Retractor to the Wheelchair for the Retractor Belt

It is important that the belt of the retractor has a direct path to the attachment point on the wheelchair. That means you never want the belt to pass through wheels or armrests, or cross the belts (for example, taking the right retractor and attaching it to the left side of the wheelchair, or vice versa).

In a perfect world, ideal attachment would be at the same height from the floor in both the front and rear of the chair. If you attach to the frame of the chair in front, attach to the frame in the rear. If you attach to the base of the seat in the rear, attach to the base of the seat in front. This is important, because if you were to attach to the frame in the rear and the seat in the front, in a significant accident, this could end up pulling the wheelchair apart.

It is important to note that some manufacturers make chairs with possible attachment hooks but have not crash tested the wheelchair with a passenger sitting in it. These attachment hooks are designed for transportation of an empty wheelchair.

If you consider using such hooks as an attachment point, treat them like any other part of the wheelchair. Ask yourself, "Are the hooks a solid welded frame member of the wheelchair? What will be the angle of the belt when attached to the floor? Is there better place to attach on the wheelchair?"



Don't automatically attach to these hooks on the wheelchair, but rather critically examine the hooks to see if they are the best option. On many power chairs, these hooks might be the best or only option. However, remember, most chairs on the market have not been crash tested.

3) Belt Angle at 45 Degrees

The correct belt angle is 45 degrees from the retractor to the attachment point on the wheelchair. Q'Straint has tested their equipment with a range of angles and 45 degrees is within their recommended range [see below.] An advantage to 45 degrees is that it is easy for an operator to "eyeball" (so you don't need to get a protractor or lie down on the floor of the bus to measure the angle). Wheel chair designs vary, and you may not be able to perfectly achieve all steps for securement. However, strive to get as close to 45 degrees as possible.

Q'Straint engineers tested and found that the 45 degree angle puts downward pressure on the wheelchair. This downward pressure keeps the wheelchair in place during routine driving. It is a critical safety practice.

Summary

In summary, best practices for proper securement include the steps above, plus some thought given to securement points before the wheelchair enters your vehicle. Remember, you are not responsible for the type and design of wheelchairs passengers bring on to your vehicle for you to secure. You are responsible, though, for adhering as closely as possible to the essential principles of wheelchair securement.

Source

Q'Straint and Sure-Lok (August, 2019). National Training Seminar Para-Transit. Seminar presented at the meeting at Q'Straint Training Center, Ft. Lauderdale, Florida.

SECURING THE CHAIR

Attachment Points - aim for:

2) Correct belt angles $\approx 45^\circ$

- Front: 40-60°
- Rear: 30-45°

Rear Securement Points: 30°, 45°

Front Securement Points: 40°, 60°

Q'STRAIN SURE-LOK

Opposite Page: The Q'Straint website provides examples of how to secure a wheelchair at metal or welded sections of the wheelchair.

Above: Q'Straint recommends attaching belts to attachment points on the wheelchair at a 45 degree angle.