

## MODULE 4 • Seat Belt Systems

### Module Agenda: 130 Minutes

Topic	Suggested Timing
1. Introduction	2
2. Federal Standards for Seat Belts	3
3. Types of Seat Belts and Seat Belt Parts	15
4. Types of Latchplates <ul style="list-style-type: none"> <li>• Progress Check: Latchplates</li> </ul>	25
5. Types of Retractors <ul style="list-style-type: none"> <li>• Progress Check: Retractors</li> </ul>	25
6. Practice Activity: Locate Latchplates and Retractors	15
7. Approved Additional Locking Steps <ul style="list-style-type: none"> <li>• Video: Install a Locking Clip</li> <li>• Video: Install a Belt-Shortening Clip</li> </ul>	25
8. Best Practices on Seat Belt Systems For Caregivers	5
9. Progress Check and Summary <ul style="list-style-type: none"> <li>• Video: Install a Car Seat with a Locking Latchplate</li> <li>• Video: Install a Car Seat with an Automatic Locking Retractor</li> </ul>	15
<b>TOTAL</b>	<b>130 Minutes</b>

### Module Purpose

The purpose of this module is to provide participants with a solid foundation on the hardware associated with seat belt systems prior to learning about car seat and booster seat installation. You will discuss:

- Federal standards for seat belts.
- Two types of seat belts.
- Seat belt parts.

### Module Objectives

- Identify federal standards related to seat belts.
- Name types of seat belts and seat belt parts.
- Describe types of latchplates.
- Describe types of retractors.
- Locate latchplates and retractors.
- Identify approved additional locking steps.
- Explain best practices about seat belt systems to caregivers.

## Special Media, Materials, and Resources

- Quick Reference Guide to Federal Motor Vehicle Safety Standards and Regulations (NCPSB website at [www.cpsboard.org](http://www.cpsboard.org))
- A variety of vehicles, seat belt parts, latchplates, and retractors
- Large laminated number cards for vehicle identification
- Keys for each demonstration vehicle (keys should be labeled for return to owner)
- Grid with seat belt systems for each demonstration vehicle and teaching team member
- Two forward-facing car seats or one per Instructor team
- Sample vehicle owner's manuals
- A locking clip and a belt-shortening clip

## Video Titles and Times

- Emergency Locking Retractor, :07 seconds (PPT 4-11)
- Automatic Locking Retractor, :06 seconds (PPT 4-12)
- Install a Locking Clip, 2:23 minutes (PPT 4-15)
- Install a Belt-Shortening Clip, 1:47 minutes (PPT 4-17)
- Install a Car Seat with a Locking Latchplate, 1:17 minutes (PPT 4-22)
- Install a Car Seat with an Automatic Locking Retractor, 1:04 minutes (PPT 4-23)

## Activities

- Progress Check: Latchplates
- Progress Check: Retractors
- Practice Activity: Locate Latchplates and Retractors
- Final Progress Check

## Preparation

- Review the videos and job aids for this module.
- Prepare for the activity and progress checks.
- Arrange for a vehicle with a switchable latchplate (a local car dealer is one option) or a stand-alone demonstration switchable latchplate. Have an owner's manual for a switchable latchplate available as a back up. It can be difficult to locate a vehicle with this type of system.
- Check all vehicle seat belt systems to determine what is available.
- Develop a grid identifying seat belt systems available to the class.
- Review the Participant Vehicle Occupant Restraint Systems Details form completed earlier in the course with each member of the instructing team, showing which seating positions in which vehicles will be used.
- If the class size exceeds available learning resources, ask participants to alternate in the practice activity.
- Remember the driver seating position does not have locking ability in most vehicles. This may be needed for comparison for participants having difficulty understanding the concept.

## 1. Introduction



### Display PPT 4-1.



Present module purpose.

The purpose of this module is to provide you with a solid foundation on the hardware associated with seat belts systems prior to learning about car seat and booster seat installation. We will discuss:

- Federal standards for seat belts.
- Two types of seat belts.
- Seat belt parts.



### Display PPT 4-2.



Present module objectives.

As a result of this module, you will be able to:

- Identify federal standards related to seat belts.
- Name types of seat belts and seat belt parts.
- Describe types of latchplates.
- Describe types of retractors.
- Locate latchplates and retractors.
- Identify approved additional locking steps.
- Explain best practices about seat belt systems to caregivers.

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## 2. Federal Standards for Seat Belts



### Reference TG page 4-1.



Introduce federal standards for seat belts.

NHTSA sets Federal Motor Vehicle Safety Standards (FMVSS) for seat belts and other safety features. This section of the module includes a basic overview of the seat belt-related government regulation of manufacturers. It lays the groundwork for what we will to learn in upcoming modules.



### Display PPT 4-3.



Review FMVSS 208.

FMVSS 208 regulates seat belts and frontal air bags (air bags are covered in Module 5).

- Beginning with 1996 model year vehicles (MY 1996), all passenger seat belt systems must lock to secure car seats. Driver seat belt systems do **NOT** lock because car seats are **NOT** installed in this position.

- Since 2008, lap-and-shoulder belts are required in all seating positions, except some front center seating positions.



Ask question and respond to comments.

***Q. What questions do you have about federal standards for seat belts?***

### 3. Types of Seat Belts and Seat Belt Parts



Reference TG page 4-1.



Display PPT 4-4.



Present lap belts.

There are two types of seat belt systems found in vehicles – lap belts and lap-and-shoulder belts.

- A lap belt offers 2-point protection because it connects with the body in two places – at each hip.
- It does **NOT** provide upper body protection.

#### [INSTRUCTOR NOTE]

[If participants ask why lap belts do not provide upper body protection, briefly describe how with no restraint above the waist, the upper body moves forward until it is stopped by something. Many times, it is the head that contacts the dashboard, front seats, consoles, doorframes, floor, or even the individual's knees. This concept will be addressed fully in coming modules.]



Present lap-and-shoulder belts.

- A lap-and-shoulder belt offers 3-point protection because it connects with the body in three places – at each hip and at the shoulder.
- It provides upper body protection.

A lap belt is better than no seat belt at all, but a lap-and-shoulder belt provides better protection.



Reference TG page 4-2.



Display PPT 4-5.



Introduce seat belt parts.

Seat belts have five main parts.

- **Buckles** accept the latchplate and hold the seat belt in place.

- **Retractors** gather and store extra webbing in the vehicle. Most lap-and-shoulder seat belts have one retractor that holds the webbing for both the lap and shoulder webbing. Some lap-and-shoulder belts have two retractors – one for the lap belt and one for the shoulder belt. Retractors are usually covered in a vehicle and not easy to see.
- **Anchors** attach the seat belts to a strong location in the vehicle.
- **Webbing** is the fabric part of the seat belt that crosses the person or holds the car seat or booster seat.
- **Latchplates** connect the seat belt webbing to a buckle in the vehicle.



Ask question and respond to comments.

**Q. What questions do you have about seat belt parts?**

#### 4. Types of Latchplates



Reference TG  
page 4-2.



Introduce the types of latchplates.

Beginning with model year 1996, federal standards have required that either the latchplate or the retractor lock to secure a car seat. This is called the lockability standard. We will begin with latchplates and how they lock or do not lock a car seat and then discuss retractors.

There are different types of latchplates that you will encounter while checking car seats.

- Locking
- Switchable
- Sliding
- Sewn-on
- Dynamic locking



Display PPT 4-6.



Reference TG  
page 4-3.



Review locking latchplates.

A **locking latchplate** on the seat belt can be found in older vehicles and in the center seat of some newer vehicles.

- Some have a locking bar found on the bottom or back. The bar moves back and forth, as well as up and down. It can be made of metal or plastic.
- Not all locking latchplates look the same. Some have a bar while others have a sliding metal or plastic piece.
- If the seat belt webbing and latchplate lie flat, the latchplate will lock.
- If the latchplate is tilted, the latchplate will remain unlocked.
- The steps to test if the latchplate locks are:
  1. Buckle the seat belt.
  2. Give a firm tug on the lap portion of the seat belt while pulling up on it. If the webbing does not slide through the latchplate, it is locked.



#### Display PPT 4-7.



Review other types of locking latchplates.

Not all locking latchplates look the same.

- Some have a bar like you saw on the first slide. Others have a sliding metal or plastic piece.
- The steps to test if the latchplate locks are the same as with the first latchplate.

#### [INSTRUCTOR NOTE]

[Demonstrate to participants how the locking latchplate creates a fixed length of webbing in the lap portion of the seat belt.]



Ask question and respond to comments.

#### ***Q. Who can name the steps to test if the latchplate locks?***

1. Buckle the seat belt.
2. Give a firm tug on the lap portion of the seat belt while pulling up on it. If the webbing does not slide through the latchplate, it is locked.



#### Display PPT 4-8.



Review switchable latchplates.

Some vehicles have a **switchable latchplate** that uses a button to move from the unlocked position for adults to the locked position for car seats (children).



#### Display PPT 4-9.



Review sliding and sewn-on latchplates.

While all seat belts will lock in a crash, not all seat belts have a latchplate that will lock to secure a car seat. Let's discuss latchplates that do not lock.

- The **sliding** and **sewn-on latchplates** in this slide have no locking feature or moving parts. Sliding latchplates are found on lap-and-shoulder belts. Sewn-on latchplates can be on lap belts and lap-and-shoulder seat belts.
- To test if these latchplates have a locking feature, buckle the seat belt and pull up on the lap portion of the seat belt. The webbing will slip through a sliding latchplate and will **NOT** lock.
- Sewn-on latchplates can be found on both lap-only and lap-and-shoulder seat belts.
- With a sewn-on latchplate, test the seat belt – **NOT** the latchplate. Buckle the seat belt and test to see if it locks by firmly pulling up on the lap portion of the seat belt. The seat belt webbing will not lengthen if some type of locking mechanism has been engaged.



Reference TG page 4-4.



Display PPT 4-10.



Review dynamic locking latchplate.

New technology can be introduced at any time. These new products may look similar to current hardware available in vehicles, but may function differently. To ensure you are using a new product correctly, you **MUST** refer to the vehicle owner's manual.

**Dynamic locking latchplates** are currently located in the front seat of some vehicles and lock the lap-and-shoulder belt when loaded by an occupant during a crash. This latchplate is **NOT** intended to lock the seat belt for a car seat.

- Some dynamic locking latchplates may seem to lock the seat belt when you buckle it across an empty seat and pull upward on the lap portion. The caregiver could believe that it is safe since it seems to lock.
- The caregiver should move the car seat to a different position or take additional steps as recommended in the vehicle owner's manual to lock the seat belt that has a dynamic locking latchplate.

- Even if you see moving parts on a latchplate, do **NOT** assume it is a locking latchplate. Test for lockability and check the vehicle owner's manual.

**[INSTRUCTOR NOTE]**

Reference TG  
page 4-5.



Conduct a progress  
check.

[Conduct the following progress check in three small groups. Have each group provide the answer to one of the questions.]

Let's review what you learned so far in this module through a progress check. Write down correct responses in your TG.

1. What are the two types of latchplates that can be locked?

**Answer:** Locking and switchable latchplates

2. What is the step to put a locking latchplate into the locking mode?

**Answer:** The only thing needed to put the locking latchplate into the locked position is to buckle it. There are no other steps.

3. What is the step to put a switchable latchplate into the locking mode?

**Answer:** A switchable latchplate requires the user to push or turn a button on the back of the latchplate from the unlocked position for adults to the locked position for car seats (children).

4. What is one way to determine if a latchplate can be locked for car seats?

**Answer:** Even if you see moving parts on a latchplate, do **NOT** assume it is a locking latchplate. Test for lockability and check the vehicle owner's manual.

5. What types of latchplates cannot be locked?

**Answer:** Sliding, sewn-on, and dynamic locking



Ask question and  
respond to comments.

***Q. What questions do you have about latchplates?***

**[INSTRUCTOR NOTE]**

[Refer participants to the Differences Between Types of Latchplates chart on page 4-5 in the TG for a summary on latchplates.]

## 5. Types of Retractors



Introduce the types of retractors.

You have already learned how retractors store seat belt webbing until needed. In some vehicles the retractor – not the latchplate – provides the locking part needed to keep a car seat in place at all times.

These retractors are usually present when a non-locking latchplate (sliding, sewn-on or dynamic locking) is present.

When talking to caregivers, try not to use technical terms and abbreviations to explain how a part works. First, explain and demonstrate how a part works. Then, make sure caregivers practice what to do and are able to explain how it works.

### [INSTRUCTOR NOTE]

[While we use many use different terms to describe seat belt and car seat parts, use the correct names in class. In this section you will be reviewing different types of retractors. They are referred to in different ways. For example, emergency locking retractor or ELR.]



Reference TG  
page 4-6.



Display PPT 4-11.



Introduce Emergency  
Locking Retractor video  
(:06 seconds).

You are most familiar with an emergency locking retractor since, as a driver, you probably use it every day. As the name implies, an **emergency locking retractor** locks only in a sudden stop, acceleration, turn, or crash.

This retractor type, along with one of the non-locking latchplates – sliding, sewn-on, or dynamic – cannot secure a car seat without an extra, approved step.

Let's look at how this retractor works.



Play Emergency  
Locking Retractor  
video.



Review emergency  
locking retractors.

Seat belts with emergency locking retractors can be found in lap-only, shoulder-only, or lap-and-shoulder belts. You cannot identify an emergency locking retractor just by looking at the seat belt. You **MUST** test the seat belt to determine if there is a locking feature.

- At the beginning of this module, you learned that the FMVSS required a lockability feature on vehicles made after 1996.
- If the vehicle is older than 1996, you might have a locking latchplate, but it is more likely that the seat belt retractor is an emergency locking retractor with a sliding latchplate and without locking ability. In that case, you will have to use an approved step to put the seat belt into a locked mode (locking clip or car seat lock-off).

**[INSTRUCTOR NOTE]**

[We will review these approved locking steps later in this module.]



Review how to test for an emergency locking retractor.

Here are the steps to test if the seat belt has an emergency locking retractor.

1. Pull all the webbing slowly and gently out of the retractor.
2. Allow some of the webbing to go back into the retractor.
3. Try to pull the webbing out again very slowly. If the webbing goes freely in and out of the retractor after you have pulled out all of the webbing, you have an emergency locking retractor.

**NOTE:** When you do this test, do not pull quickly or jerk the webbing because this might trigger the emergency locking features of the retractor.



**Display PPT 4-12.**



Introduce Automatic Locking Retractor video (:07 seconds).

Automatic locking retractors are generally easy to use with car seats, but are almost never found in newer vehicles.

Let's look at how this retractor works.



Play Automatic Locking Retractor video.



Review how to test for an automatic locking retractors.

To check if the retractor will lock:

1. Pull 24 to 36 inches of webbing slowly and gently out of the retractor where the extra webbing is stored.
2. Allow some of the webbing (3 to 6 inches) to spool back in the retractor.

3. Gently pull the webbing. If no webbing comes out, then the retractor is an automatic locking retractor.

Some seat belts with automatic locking retractors may appear to have no locking ability if tested when the seat belt is pulled out a very short distance (less than 12 to 18 inches) from the retractor.

- That 12 to 18-inch space is known as the dead-zone and may fool you into thinking the seat belt has no locking ability.
- The true test of seat belt system locking is to pull firmly up on the lap part of the buckled seat belt. The belt should not lengthen. You can also put the belt around yourself and if it locks in place and continues to get smaller and cannot lengthen, you have identified an automatic locking retractor.



**Display PPT 4-13.**



**Reference TG page 4-7.**



Introduce switchable retractors.

The final type of retractor we will discuss is switchable.

- **Switchable retractors** start out in an unlocked “comfortable” mode for adult occupants and switch to a locked mode for use with a car seat.
- A switchable retractor with a sliding latchplate is the most common system you will encounter in the field.
- Just like the switchable latchplate, you manually have to change this retractor from an emergency mode to the automatic locking mode.
- Once switched to the automatic locking retractor mode, this belt will only shorten and cannot be lengthened. To return to the emergency locking mode, this belt must be unbuckled and the all of the webbing fed back into the retractor.

Switchable retractors can be found in vehicles with:

- Lap-belt-only
- Lap-and-shoulder belt



Review switchable retractors.

Seat belts with switchable retractors switch to a tight locked seat belt to install a car seat. Remember, correct installation of a car seat requires the seat belt to be locked at all times.

- A switchable retractor switches to an automatic locking retractor by pulling the belt all the way out slowly.
- You may find instructions on the seat belt webbing for how to use the seat belt with a car seat but many switchable retractors do not come with a label. Test the retractor to be certain.
- A seat belt with a switchable retractor fits the adult comfortably and will lock only in an emergency such as a crash, acceleration, sudden stop, or turn. It should only be switched to the locking position to install a car seat or, in some cases, a booster seat.
- To check if the seat belt has a switchable retractor:
  1. Slowly pull out all of the webbing from the retractor. Like when you tested the emergency locking retractor, be careful not to pull too quickly on the webbing because this might trigger the emergency locking mechanism.
  2. When you have pulled all the webbing out of the retractor, let a few inches go back in. You probably will hear a clicking sound as the webbing goes back into the retractor.
  3. Pull on the webbing. If the webbing will not pull out again, the belt is locked and you have confirmed that the seat belt has a switchable retractor.

### [INSTRUCTOR NOTE]

[Describe how some vehicles (mostly older vehicles and trucks) use two separate retractors – one at the hip or floor and one at the shoulder – to provide locking before a crash. Only the retractor at the hip or floor provides a way to lock down the car seat.

Indicate that some lap belts have no retractor and the webbing lies freely on the seat.]



Ask question and respond to comments.

***Q. What questions do you have about retractors?***



Reference TG  
page 4-8.

**[INSTRUCTOR NOTE]**

[Conduct the following progress check in small groups or pairs. Have each group provide the answer to one of the questions.]



Conduct a progress check.

Let's review what you learned about retractors through a progress check. Write down correct responses in your TG.

1. What are the two types of retractors that can lock in a car seat?

**Answer:** Automatic locking retractor and switchable retractor

2. How can an emergency locking retractor be identified?

**Answer:** You cannot identify an emergency locking retractor just by looking at the seat belt. You **MUST** test the seat belt to determine if there is a locking feature.

3. What are the steps to identify a switchable retractor?

**Answer:**

1. Slowly pull out all of the webbing from the retractor. Like when you tested the emergency locking retractor, be careful not to pull too quickly on the webbing because this might trigger the emergency locking mechanism.
2. When you have pulled all the webbing out of the retractor, let a few inches go back in. You probably will hear a clicking sound as the webbing goes back into the retractor.
3. Pull on the webbing. If the webbing will not pull out again, the belt is locked and you have confirmed that the seat belt has a switchable retractor.

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## 6. Practice Activity: Locate Latchplates and Retractors



**Reference TG**  
page 4-9.



Conduct practice activity and debrief.

You have learned about all the different types of retractors and latchplates. Now you will have a chance to see them in vehicles and determine how to lock the seat belt system.

1. For each vehicle, write the vehicle number and mark the seating location in the column on the left side of each table.
2. Locate the seat belt latchplate and retractor for each vehicle and seating locations and enter it the column on the right side of each table.

This is not a quiz right now, but you will be assessed on these skills later in the course.

### [INSTRUCTOR NOTE]

[Be sure that vehicles are numbered and that participants are given vehicle numbers and seating positions to mark in the TG.

Have a member of the Instructor team stationed at each vehicle to assist as participants check the seat belt system.

Ask participants to identify the seat belt latchplate and retractor and place their answers on the worksheet.

Give participants 20 minutes for this practice activity.

When everyone has completed the practice activity, bring them together and ask for answers, vehicle by vehicle.

This exercise can be done as a group, but ensure that every participant has initially made their own assessment and written it down.

Provide feedback and encouragement to participants.]

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## 7. Approved Additional Locking Steps



**Reference TG**  
page 4-10.



Introduce approved additional locking steps.

In vehicles made before 1996, seat belts were not federally required to provide a locking feature you learned about earlier in the module. Some vehicles did have the locking feature, but it was voluntary on the part of the manufacturer.

Vehicle manufacturers approved two additional steps to secure a car seat in vehicles where neither the retractor nor the latchplate can be locked at all times.

- With a lap-and-shoulder belt, a locking clip/lock-off is one of the approved additional steps.
- With a lap belt with a sewn-on latchplate, belt-shortening clips are the approved additional step.
- You should **NEVER** use a belt-shortening clip with a lap belt that has a locking latchplate.

**Display PPT 4-14.**

Review locking clip/lock-off.

Three conditions must be present to use a locking clip:

- Retractor = emergency locking
- Latchplate = sliding
- Lap-and-shoulder belt is all one piece of webbing

Locking clips (lock-offs) come on the car seats from the factory.

- A locking clip clamps the tightened lap-and-shoulder belt together within 1 inch of the latchplate to make the lap belt a fixed length.
- A lock-off can be on either side of the car seat and must be used according to the car seat manufacturer. This also locks to make the lap belt a fixed length. It is the fixed length lap belt that locks a car seat in place.
- They can be permanently attached to the car seat (lock-off) or can be separately stored on the car seat for removal and use by the consumer. Either a lock-off or locking clip is safe to use. They perform the same function. Do **NOT** use a locking clip if a lock-off is present on the seat.
- A locking clip locks the lap-and-shoulder belts together so the car seat does not move more than 1 inch side-to-side or front-to-back at the belt path.
- Locking clips **MUST** be placed according to the manufacturer instructions. Unless instructed otherwise, place the locking clip no more than 1 inch from the latchplate.
- Incorrect placement of the locking clip can lead to too much slack in the seat belt in a crash and can result in serious injury to child.

- The locking clip (lock-off) is a temporary fix until the retractor engages in a crash. The locking clip can come off in a crash.

**[INSTRUCTOR NOTE]**

[Use seat belt webbing and a sliding latchplate to demonstrate how a locking clip creates a fixed length of webbing in the lap portion. Show how it would be placed on the belt in relationship to the latchplate (within an inch of the latchplate). Also demonstrate removing the clip – folding/pinching it in half and taking off.]

If available, have each participant place a locking clip on a section of webbing and then remove it. No car seat is needed during this demonstration. This is only to familiarize the participant with the use and feel of a locking clip.]



**Reference TG**  
page 4-11.



**Display PPT 4-15.**



Introduce Install a Locking Clip video (2:23 minutes).

Let's view a video on how to install a locking clip.

- Watch for the installation steps.
- Take notes in your TG as you watch the video.



Play Install a Locking Clip video.



Ask question and respond to comments.

***Q. What questions do you have about locking clips?***



**Reference TG**  
page 4-11.



Introduce belt-shortening clips.

Let's discuss another approved additional step to use if you are educating caregivers who have an older vehicle that has no locking feature in the seat belt system.



**Display PPT 4-16.**



Review belt-shortening clips.

Three conditions must be present to use a belt-shortening clip:

- Retractor = emergency locking
- Latchplate = sewn-on
- A separate lap belt with no locking feature (there may or may not be a separate shoulder belt)

The belt-shortening clip takes the place of the retractor as all the webbing is pulled out of the retractor and shortened with the belt-shortening clip.

- Frequently, this type of seat belt is found in the front seat of an older car with a motorized shoulder belt and a separate lap belt.
- You can often move a car seat to a back seat location, but in some vans and school buses there will be no other seating position.
- There are times when only a belt-shortening clip will provide the locking feature on a lap belt because neither the retractor nor the latchplate locks.
- While the stronger belt-shortening clip could be used in place of a locking clip (that comes free with a car seat), the locking clip **NEVER** takes the place of the belt-shortening clip to shorten a seat belt.
- Use belt-shortening clips as a last resort. Carefully assess all other alternatives before using this clip.
- Belt-shortening clips are considered vehicle parts (have a part number) and can be purchased at the parts department of an auto dealership.



Reference TG  
page 4-12.



Display PPT 4-17.



Introduce Install a  
Belt-Shortening Clip  
video (1:47 minutes).

Let's view a video on how to install a belt-shortening clip.

- Watch for the installation steps.
- Take notes in your TG as you watch the video.



Play Install a Belt-  
Shortening Clip video.

### [INSTRUCTOR NOTE]

[Pass around a belt-shortening clip and a locking clip so participants can see how similar both clips look. Emphasize the differences between the two clips.

Emphasize how the belt-shortening clip is made of heavier metal. A belt-shortening clip can be used as a locking clip but a locking clip can **NEVER** be used to perform belt-shortening.]



Ask question and respond to comments.

***Q. What questions do you have about belt-shortening clips?***



Reference TG  
page 4-12.



Display PPT 4-18.

**[INSTRUCTOR NOTE]**

[Refer participants to the table that provides a summary of when to use a locking clip/lock-off vs. a belt-shortening clip. Emphasize that a locking clip should never be used to shorten a seat belt. It is not strong enough by itself to keep a belt shortened during a crash.]



Reference TG  
page 4-13.



Display PPT 4-19.



Review when to flip the latchplate and/or twist the buckle stalk.

Sometimes, even seat belts that are designed to lock cannot because of the car seat belt path.

Unbuckling and flipping the latchplate over is a step that has been crash-tested and approved for use in most vehicles if the locking latchplate is tilted and stays in an unlocked position.

- Check the vehicle owner's manual to see if the manufacturer prohibits twisting a seat belt to shorten the webbing.
- Not all latchplates allow for flipping.

Twisting the buckle stalk is helpful when the buckle does not lie flat, is in the car seat belt path, or does not allow the belt to be locked with an additional part. This will make the buckle webbing shorter and buckle lower.

1. Check the vehicle owner's manual to see if buckle twisting is allowed.
2. Be sure the buckle release is accessible after twisting.



Review additional reasons to flip a latchplate or twist a buckle stalk.

Sometimes, when a seat belt passes through the car seat belt path as directed by the manufacturer, the latchplate will be positioned so that the locking mechanism is tilted and does not hold the car seat tightly.

The seat belt is probably out of position and cannot lock (remember that the webbing and latchplate must be flat to stay locked).

- There are approved steps to fix this condition:
  1. Flip the latchplate over one time to engage the latchplate's locking feature. This changes the locking angle. Always test the seat belt to be sure it remains locked tightly.
  2. Twist the buckle stalk if it is made of webbing.
    - Best practice is to twist as little as is necessary to obtain a tight seat belt fit.
    - **ALWAYS** use a minimum number of twists, with a maximum of three. The Society of Automotive Engineers (SAE) Child Restraint Subcommittee, based on IMMI data (seat belt webbing company), agreed upon this number.
- It is approved to use a locking clip on a lap-and-shoulder seat belt with a locking latchplate as a last resort. If flipping the latchplate and twisting the buckle webbing do not keep the seat belt from pulling out, you can use a locking clip.
- It is important to remember to check the manufacturer's instructions for both steps, as some buckles cannot be twisted and some latchplates cannot be flipped. Most manuals, however, will not mention or prohibit flipping latchplates or twisting buckle stalks.

**[INSTRUCTOR NOTE]**

[Encourage CPS Technicians to find other ways that do not require flipping the latchplate.]



Ask question and respond to comments.

***Q. What questions do you have about approved additional locking steps?***

## 8. Best Practices on Seat Belt Systems for Caregivers



**Reference TG**  
page 4-14.



Reinforce how to explain best practices to caregivers.

There are key questions to ask caregivers related to seat belt systems.



Display PPT 4-20 and 4-21.

**[INSTRUCTOR NOTE]**

[Review the key questions related to seat belt systems.]

Explain and demonstrate best practices to caregivers.

Test whether a seat belt provides locking protection.

- Buckle the seat belt.
- Give a firm tug on the lap portion of the seat belt while pulling up on it.

Test your retractor for lockability.

- Pull all the webbing slowly and gently out of the retractor.
- Allow some of the webbing to go back into the retractor.
- Try to pull the webbing out again very slowly.
- If the webbing goes freely in and out of the retractor, you have an emergency locking retractor. If the webbing stays locked and makes a clicking noise when you let it go back in, then you have an automatic locking retractor. If it moves freely but then locks when you pull all of the webbing out, you have a switchable retractor.

Determine when to use a locking clip. You must have the following:

- Emergency locking retractor
- Sliding latchplate
- Lap-and-shoulder belt is all one piece of webbing

Determine when to use a belt-shortening clip. You must have the following:

- Emergency locking retractor
- Sewn-on latchplate
- A separate lap belt with no locking feature (there may or may not be a separate shoulder belt)



Ask question and respond to comments.

***Q. What remaining questions do you have about seat belt systems and your role in explaining best practices to caregivers?***

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**9. Progress Check and Summary**



Reference TG page 4-15.



Conduct a progress check.

Let's review what we learned in Module 4 through a final progress check. Work with a partner and take a few minutes to complete the matching exercise.

1. Fill in the correct answers from the right-hand column for each of the questions.
2. Write down responses in your TG.

### [INSTRUCTOR NOTE]

[Ask for responses to each question. If one pair has an incorrect answer, ask another pair to share their response. Provide answers as needed.]

1. Name the latchplates that do not lock before a crash.

**Answer:** Sliding, sewn-on, and dynamic locking

2. Which retractor has no locking feature under normal driving conditions?

**Answer:** Emergency locking retractor

3. Which tool would you use with an emergency locking retractor lap belt and a sewn-on latchplate to secure a car seat?

**Answer:** Belt-shortening clip

4. Which retractor is always locked when it is buckled under normal driving conditions?

**Answer:** Automatic locking retractor

5. What retractor changes from one mode to another?

**Answer:** Switchable retractor

### [INSTRUCTOR NOTE]

[Use a vehicle seat to demonstrate how to install a car seat with an automatic locking retractor, emergency locking retractor, and a switchable retractor by feeding the seat belt through the car seat belt path and appropriately locking the belt systems lap belt.

Also, demonstrate the locking of the belt system around a car seat using the locking, switchable, and sliding latchplate. This is **ONLY** to demonstrate how the belts work with the systems identified in this module. The correct installation of car seats will be covered in future modules.

**NOTE:** The following two videos can be shown to demonstrate how to install a car seat with a locking latchplate and how to install a car seat with an automatic locking retractor.]



**Display PPT 4-22.**



**Reference TG page 4-15.**



Introduce Install a Car Seat With a Locking Latchplate video (1:17 minutes).

Let's view a video on how to install a car seat with a locking latchplate.

- Watch for the installation steps.
- Take notes in your TG as you watch the video.



Play Install a Car Seat With a Locking Latchplate video.



Ask question and respond to comments.

***Q. What questions do you have about installing a car seat with a locking latchplate?***



**Display PPT 4-23.**



**Reference TG page 4-16.**



Introduce Install a Car Seat with an Automatic Locking Retractor video (1:04 minutes).

Let's view a video on how to install a car seat with an automatic locking retractor.

- Watch for the installation steps.
- Take notes in your TG as you watch the video.



Play Install a Car Seat With an Automatic Locking Retractor video.



Ask question and respond to comments.

***Q. What questions do you have about installing a car seat with an automatic locking retractor?***



Refer participants to rare installation resources.

The four rare installation videos we reviewed in this module are available on the NCPBSB website. View them periodically to keep your skills fresh.

Job aids with photographs and installation steps are also on the NCPBSB website and in the Appendix of your TG. Be sure to have these resources available when educating caregivers.



Conclude module.

Our purpose with this module was to provide you with a solid foundation on seat belt systems – how they lock for use with a car seat and the steps you need to take to lock them if they do not lock. We have briefly explained and shown you how these systems lock for the correct use and installation of a car seat.

Now that you are more familiar with seat belt systems, let's take a closer look at occupant protection systems.

- When used properly, the vehicle's occupant protection system can save lives.
- As a CPS Technician, you will educate caregivers in the correct use of these systems.

