

National Child Passenger Safety Technician Certification Training

TECHNICIAN GUIDE



REAR-FACING
CAR SEAT



FORWARD-FACING
CAR SEAT



BOOSTER SEAT



SEAT BELT



2020

WEBSITE RESOURCES

For CPSTs

nhtsa.gov

- NHTSA's Car Seat Recommendations for Children
- Ease-of-Use Ratings
- Inspection Station Locator
- See also NHTSA's trafficsafetymarketing.gov site for traffic safety campaign materials

cpsboard.org

- Curriculum Resources
- CEU Online/Web Sessions
- National Digital Car Seat Check Form
- CPS Award Nomination Forms

cert.safekids.org

- Recertification Resources
- CEU Online/Web Sessions
- *CPS Express*: E-Newsletter for Child Passenger Safety Technicians
- CPS Certification Policies and Procedures Manual



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Introduction

MODULE OBJECTIVES



- **EXPLAIN** the role of each partner supporting the National Child Passenger Safety Technician Certification Training.
- **DESCRIBE** the purpose, goals, and completion requirements of the National Child Passenger Safety Technician Certification Training.
- **IDENTIFY** resources for current injury and misuse data.

Education and proper use of car seats, booster seats, seat belts, and vehicle safety systems helps save lives and can prevent injuries and deaths. Child Passenger Safety (CPS) Technicians are trained educators in the field of occupant protection. The National Child Passenger Safety Technician Certification Training is a nationally standardized curriculum developed through a partnership of organizations.

WELCOME

TECH TIP

The first occurrence of glossary terms in this guide appear in **blue, bolded text**.

The glossary of terms is in the Appendix.

Partnerships

The National Child Passenger Safety Technician (CPST) Certification Training is a partnership between three organizations.

- The **National Highway Traffic Safety Administration (NHTSA)** developed the original curriculum and remains committed to providing regular updates to the curriculum.
- The **National Child Passenger Safety Board (NCPSB)** maintains the quality and integrity of the National CPST Certification Training curriculum. The National Safety Council manages the activities of the NCPSB.
- **Safe Kids Worldwide** is the certifying body responsible for administering all aspects of the CPST Certification program.



The National Child Passenger Safety Technician (CPST) Certification Training is a partnership between these organizations.

Purpose of the CPST Certification Training

Why are we here?

Motor vehicle crashes are a leading cause of death and injuries for children.¹

Education and proper use of car seats, booster seats, seat belts, and vehicle safety systems helps save lives and can prevent injuries and deaths. When used correctly, the risk of hospitalization, injury, and death for children is greatly reduced.



Disclaimer

Car seat photos in this Technician Guide are examples and do not represent product endorsement.

“If a disease were killing our children at the rate unintentional injuries are, the public would be outraged and demand that this killer be stopped.”

—Former US Surgeon General, C. Everett Koop

CRIME/CRASH CLOCK

Crime

- 1** murder every **30.5** minutes
- 1** violent crime every **24.6** seconds
- 1** property crime every **4.1** seconds
- 1** burglary every **22.6** seconds



Crash

- 1** fatality every **14** minutes
- 1** person injured* every **13** seconds
- 1** property damage* crash every **7** seconds
- 1** law-enforcement-reported* crash every **5** seconds

Data Sources: Crime – Federal Bureau of Investigation’s 2017 Crime Clock Statistics, Crime in the United States. Crash – NHTSA Fatality Analysis Reporting System (FARS) 2017.

*National Automotive Sampling System (NASS) General Estimates System (GES) 2015.

Key Statistics

Here are some key statistics you can share with others to support your efforts in child passenger safety.

- On average, three children are killed and an estimated 487 are injured every day in the U.S. in traffic crashes.²
- When the driver is buckled, children are restrained 92% of the time.³
- When the driver is unbuckled, children are restrained about 68% of the time.³
- Car seats decrease the risk of a fatal injury by 71% among infants, and 54% among toddlers.⁴
- Booster seats reduce the risk of nonfatal injuries by 45% among four- to eight-year-old children when compared to the seat belt alone.^{5,6}
- Car seats and booster seats are often used incorrectly. One study found that almost 46% of observed car seats and booster seats were misused. Misuse increases risk of injury or death.⁷
- In 2017, it is estimated that 325 children under age five were saved because of restraint use. Over the period of 1975 through 2017, 11,606 lives of children under age five have been saved because of **child restraint** use.^{8,9}
- Concerning the economic impact of crashes, it is estimated that in a one-year period, the cost of medical care and productivity losses associated with occupant injuries (all ages) and deaths from motor vehicle traffic crashes exceeded \$63 billion.¹⁰

*Drivers who **BUCKLE UP** are
more likely to have child
passengers who **BUCKLE UP**.*



RESOURCES FOR STATISTICS

Resources for current injury and misuse data across the country and in your community include the following.

- National Highway Traffic Safety Administration (NHTSA) ([nhtsa.gov](https://www.nhtsa.gov))
- National Child Passenger Safety Board ([cpsboard.org](https://www.cpsboard.org))
- Safe Kids Worldwide ([safekids.org](https://www.safekids.org))
- American Academy of Pediatrics (AAP) ([aap.org](https://www.aap.org))
- Centers for Disease Control and Prevention (CDC) ([cdc.gov/injury](https://www.cdc.gov/injury) and [cdc.gov/motorvehiclesafety](https://www.cdc.gov/motorvehiclesafety))
- Governors Highway Safety Administration (GHSA) ([ghsa.org](https://www.ghsa.org))
- Insurance Institute for Highway Safety (IIHS) ([iihs.org](https://www.iihs.org))
- National Safety Council Injury Facts ([nsc.org/injuryfacts](https://www.nsc.org/injuryfacts))
- State and local health departments
- Car seat, booster seat, and vehicle manufacturer websites

TECH TIP

Review educational materials (articles, websites, videos, brochures, handouts etc.), every year to be sure you are providing accurate and current information.

Go to NHTSA's [traffic safety marketing.gov](https://www.traffic-safety-marketing.gov) for up-to-date information and educational materials.

CPST Certification Training Goals

The goals of the National CPST Certification Training are to:

1. Provide basic technical knowledge about car seats, booster seats, and seat belt systems.
2. Create opportunities to develop and practice effective communication skills to educate **caregivers** on the safe transportation of children.

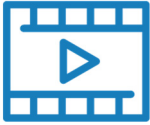


COMPLETION REQUIREMENTS

To become certified as a **CPS Technician**, you must complete the following tasks.

1. Attend the entire training.
2. Participate in class discussions and practice activities.
3. Pass three written quizzes with a total of 42 of 50 questions answered correctly.
4. Pass all four skills evaluations.
 - When taking the written quizzes and skills evaluations, please use all available resources including your Technician Guide (TG).
 - If you need special testing accommodations, please talk to the Lead Instructor as soon as possible to discuss options available to you.
 - If you do not successfully complete the written quizzes or skills evaluations, retests are not allowed.

By understanding the correct use of car seats, booster seats, and seat belts, CPS Technicians provide caregivers important information and resources on the safe transportation of children.



VIDEO—BUBBLE WRAP

Watch the video [Bubble Wrap: Having Trouble Installing Your Car Seat? We Can Help.](#)

Location of Videos

- Unless noted, all videos featured in this Technician Guide are available for viewing at cpsboard.org.

The best way to protect children in the car is to put them in the right seat at the right time—and use it the right way!



Disclaimer

While the National Highway Traffic Safety Administration (NHTSA), an operating administration of the U.S. Department of Transportation (DOT), updates the training curriculum with the latest technical information, the opinions, findings, and conclusions expressed in this publication are those of the author(s) and not necessarily those of NHTSA or the U.S. DOT. The United States Government assumes no liability for its content or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.



Progress Check

1

What roles do NHTSA, NCPSB, and Safe Kids Worldwide play in the National CPST Certification Training?

2

What is the best way to protect children in the car?

3

What facts might you use to help explain to a caregiver how car seats save lives?

4

What are the main goals of this training?

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<https://www.cdc.gov/injury/wisqars>

NOTES 

2

The CPS Technician Role

MODULE OBJECTIVES



- DESCRIBE the CPS Technician's role as an educator.
- REVIEW the Learn, Practice, Explain model.
- DISCUSS best practices and caregiver choices.

CPS Technicians come from diverse backgrounds but they have one thing in common—keeping children safe in vehicles. CPS Technicians educate caregivers on best practices for the safe transportation of children so caregivers can make educated decisions.



Activity—Install a Car Seat

Record a Five-Minute Car Seat Install

1. Work in teams of two and install a car seat.
2. Use a cell phone to record the installation.
 - Your video should be no longer than five minutes.
3. Keep the video recording until the end of class.
4. Answer the following questions.

1**How do you think you did with your first installation?**

2**What do you expect to learn in class?**

TECH TIP

How we pick up, handle, and install car seats is important—just like how we sit, stand, lift, carry, bend, and sleep is important.

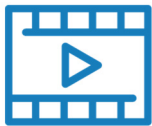
Gentle reminders for CPS Technicians:

Avoid twisting or reaching back. Pivot around using foot movements so that you are not rotating your trunk.

Bend at hips and knees. Keep feet shoulder-width apart.

When installing the car seat in the vehicle, take care not to strain yourself. You should not climb into a car seat. You can tighten the seat belt using leverage, not force.

The CPS Technician Role

**VIDEO—CPS TECHNICIAN ROLE**

As you watch The CPS Technician Role video, look for specifics about how you can use your new CPS skills.

CPS TECHNICIAN ACTIVITIES

This training will equip you with the basic skills to educate caregivers about child passenger safety. You may accomplish this in several different ways, including:

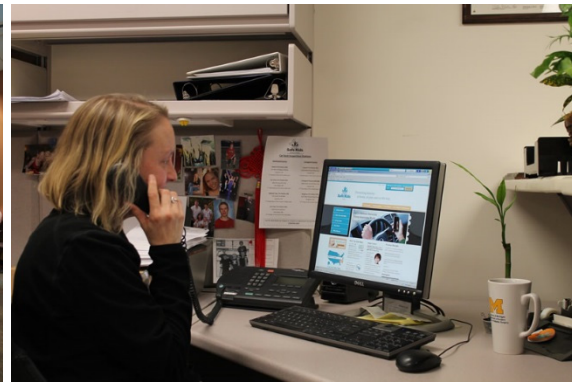
- Checkup events
- Health and safety fairs
- Educational presentations
- One-on-one interactions with caregivers



Car seat checkup event



Health and safety fairs, community events, and educational presentations



Telephone and email communication

The Learn • Practice • Explain Model

In this course, we will use a learning model called **Learn, Practice, Explain**. This model has three main components.

LEARN	the facts/skills/information.
PRACTICE	the facts/skills/information.
EXPLAIN	(teach) what you have learned to caregivers.

You will see Learn, Practice, Explain call-out boxes throughout this curriculum that will focus on these components.

Best Practice and Caregiver Choices

The goal for each interaction with a caregiver is for the caregiver to leave better educated, empowered, and confident in their new skills.

In your role as a CPS Technician, you will explain best practices to caregivers so they can make educated decisions.

BEST PRACTICE

Best practice is the gold standard of protection (while following car seat manufacturer instructions). It is the safest way to transport a child based on the child's:

- Age
- Weight
- Height
- Developmental level

TECH TIP

It is important to understand the difference between best practice and state law. Learn where to locate your state law. (See resource list in Module 1.)

CAREGIVER CHOICES

Caregivers have the final decision on how to transport their child. In most cases, caregivers want to follow best practice. At times, caregivers may make choices that do not follow best practice. Caregivers have many different reasons for their choices. This is influenced by their culture, practices, beliefs, and personal experiences.



CPS Technician explaining best practice to caregiver

GOOD, BETTER, BEST

As a CPS Technician, it is your responsibility to understand and respect caregiver choices. You should support caregiver choice as long as car seat manufacturer instructions and state law are followed. Caregiver choice can be classified into the following categories.

TECH TIP

The primary and best resource for correct use of car seats is the manufacturer of the car seats.

- **GOOD:** The caregiver may be following the minimum car seat manufacturer instructions for height and weight for the car seat and/or meeting state law requirements.
- **BETTER:** The caregiver may be following the car seat manufacturer's instructions; going above the minimum height and weight requirements while not exceeding the maximum height and weight requirements and meeting state law.
- **BEST:** The caregiver is using the car seat to the maximum height or weight limits for the car seat based on car seat manufacturer instructions and meeting and exceeding state law requirements.

CPS TECHNICIANS AND CAREGIVER CHOICES

As a CPS Technician—or CPST—you should never support a caregiver in either breaking the law or going against car seat or vehicle manufacturer instructions. In cases where the caregiver does not make a safe choice, document the actions on your check form. Documentation on a form with a liability release should be standard practice.

CPST Code of Conduct

- The CPST Code of Conduct outlines what is expected of CPS Technicians in respect to conduct and applies to all verbal, non-verbal, and written communication while interacting with colleagues and caregivers. The CPST Code of Conduct can be found at cpsboard.org and on the inside back cover of the Technician Guide.



Progress Check

1

What is best practice? What may prevent caregivers from following best practice?

2

How is the good, better, best model useful in educating caregivers?

3

Who is responsible for making the final decision on how to transport a child?

4

Where is the best place to find correct instructions for use of a car seat?

3

Crash Dynamics

MODULE OBJECTIVES



- DESCRIBE the three stages of a crash.
- EXPLAIN how to estimate restraining force.
- DESCRIBE five ways that car seats, booster seats, and seat belts save lives.

Motor vehicle traffic crashes are a leading cause of death in the U.S.¹ As a driver, you may do everything correctly and still get into a crash. One way to understand how car seats, booster seats, and seats belts help to save lives is to look at the dynamics of a crash.

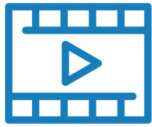
Three Stages of a Crash

Every vehicle crash (or, collision) includes three stages.

- Stage 1: The vehicle crash
- Stage 2: The **human crash**
- Stage 3: The **internal crash**

TECH TIP

Many factors in a crash determine outcomes. These factors include vehicle size, speed, and point of impact. Some crashes are so violent that even properly restrained occupants are injured or killed.

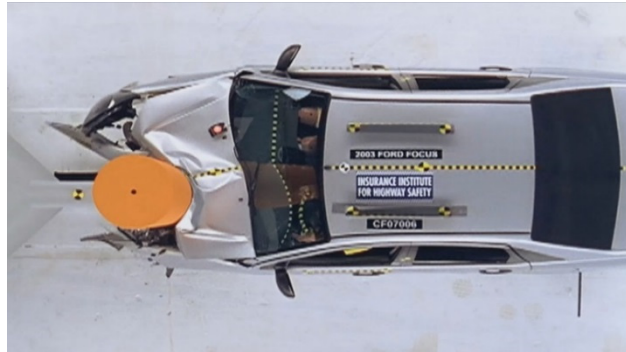


VIDEO—THREE STAGES OF A CRASH

Watch the video [Three Stages of a Crash](#).

VEHICLE CRASH

The first crash occurs when the vehicle strikes another vehicle or object. The vehicle body crushes and deforms while rapidly **decelerating** and coming to a stop.



HUMAN CRASH

The second crash occurs as the vehicle comes to a stop and the occupants in the vehicle continue to move toward the point of impact at the vehicle's original speed.

The second, or human, crash occurs as the occupants collide with parts of the vehicle interior, **air bag**, and/or the restraint **webbing** if restrained.

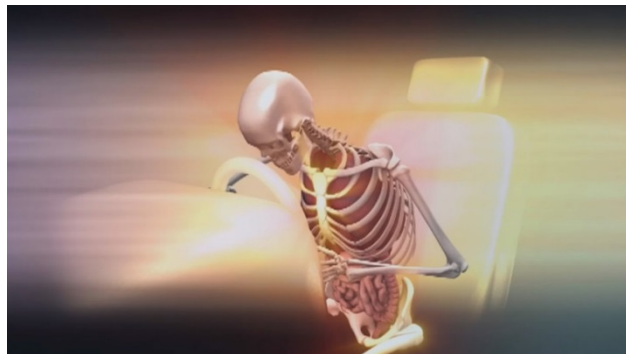
Unrestrained objects in the vehicle move with the same speed upon impact, including people. Any unrestrained item or person can become a projectile, causing serious or fatal injuries.



INTERNAL CRASH

The third, or internal, crash occurs after an occupant's body comes to a complete stop, and the internal organs continue to move toward the point of impact.

The organs continue until they collide with other organs or bone, often causing internal bleeding or organ damage.²



Types of Crashes and Resulting Injuries

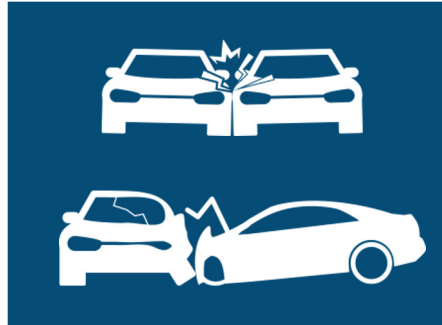
Injury and death can occur in almost any type of crash.

- **Frontal crashes** are the most common. Typical injuries involve the neck, head, upper body and lower body.³
- **Rear-end crashes** are usually less severe than frontal crashes. Back and neck injuries, such as **whiplash**, are common.⁴
- **Lateral** and **side impact crashes** may result in neck, head, upper body and lower body injuries.⁵
- **Rollovers** and **vaults** are dangerous incidents and have a higher fatality rate than other kinds of crashes. Typical injuries involve the neck, head, upper body and lower body. Unrestrained occupants may be thrown from the vehicle and suffer fatal injuries.⁶
- In a **rotation** (or spin), unrestrained occupants are more likely to be injured as they hit the vehicle interior repeatedly. Typical injuries involve the neck, head, upper body and lower body. Unrestrained occupants may be thrown from the vehicle and suffer fatal injuries.

FRONTAL CRASHES



REAR-END CRASHES



LATERAL AND SIDE IMPACT CRASHES

ROLLOVER CRASHES



ROTATION OR SPIN

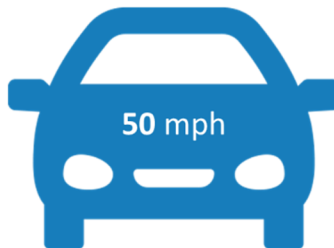
Restraining Force

In any crash, even a minor one, occupants in the vehicle can be seriously injured. The forces involved in a crash are larger than most people realize. Caregivers may mistakenly believe that they can restrain a child in a crash by holding them in their arms.

One way to help caregivers understand this is to explain that the force needed to restrain an occupant approximately equals the weight of the occupant multiplied by the vehicle speed.

$$\text{WEIGHT} \times \text{SPEED} = \text{RESTRAINING FORCE}$$

(The force needed to restrain an occupant)



EXAMPLE

A 10-pound infant in a vehicle moving at 50 mph requires about 500 pounds of **restraining force** to remain in place.

MATH:

10 lbs. x 50 mph = 500 pounds of restraining force

How Car Seats and Seat Belts Prevent Injury

Using car seats, booster seats, and seat belts is the most important thing we can do to prevent injury in a crash. While car seats, booster seats, and seat belts do not prevent crashes from taking place, they play a major role in reducing the severity of injury to people involved in a crash.



Two-year-old correctly restrained



Four-year-old correctly restrained

Even in the very rare chance of a vehicle catching fire or landing in the water, a properly belted person is more likely to be uninjured and conscious, so they are able to exit from the vehicle.

The Stats

- These incidents are incredibly rare. In fact, crashes involving fire or water account for only one-half of 1% of all crashes.⁷
- Three out of every 100 vehicles involved in 2016 fatal motor vehicle traffic crashes had a fire occur.⁸
- Fewer than one out of every 100 vehicles involved in 2016 fatal motor vehicle traffic crashes were submerged in water.⁹

HOW PROTECTION WORKS

How do car seats, booster seats, and seat belts prevent injury?

1. Keep people in the vehicle.
2. Direct crash forces to the strongest parts of the body—the hips and shoulders.
3. Spread forces over a wide area of the body, putting less pressure on any one part.
 - **Lap-and-shoulder belts** and car seat **harnesses** spread the forces across the strongest parts of the body.
 - A **rear-facing car seat** spreads the crash force across the shell of the seat, protecting the child's head, neck, and spinal cord.
4. Protect the head, neck, brain, and spinal cord.
 - A car seat harness or lap-and-shoulder belt helps to keep the head and upper body away from the interior surface of the vehicle.
5. Help the occupants **ride down** crash forces.

TECH TIP

A common myth is that occupants are better off being ejected from the vehicle and thrown clear of a crash. Unrestrained occupants are 17.7 times as likely to be ejected from their vehicles (which is almost always deadly), compared to restrained occupants.^{10,11}

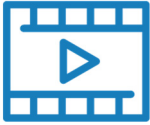


Six-year-old correctly restrained



Eight-year-old correctly restrained

An occupant's chance of survival increases dramatically when appropriately restrained.



VIDEO—UNDERSTANDING RIDE DOWN

Watch the video Understanding Ride Down.

Ride Down a Crash

- Occupants experience an abrupt stop in a crash which can send high crash forces into the body, causing injury or death. To minimize the chance for injury or death we need to increase the stopping time and reduce the crash forces on the body. This is called “riding down” the crash.
- During the vehicle crash, the vehicle crumple zones absorb crash forces and help to extend the time it takes for the vehicle to slow down.
- Car seats, booster seats, and seat belts help the body to slow down during the human crash stage. They extend the time it takes for the occupant to slow down and reduce the crash forces to the body. We want to “ride down” the crash and avoid abrupt stops such as being unrestrained or loosely restrained.
- Tightly securing the car seat to the vehicle and correctly adjusting harnesses snugly on the child also improves ride down benefits.
- Think of catching an egg. You must catch the egg and slow the egg’s speed (velocity) with your hand and arm movement until the energy is dissipated. If you stop the egg abruptly, it will likely break.



Correctly restrained



LEARN • PRACTICE • EXPLAIN—CATCHING AN EGG

Using the example of catching an egg, work with a partner and explain the concept to one another.



Progress Check

1

What are the three stages involved in every crash?

2

What is the most important step caregivers can take to prevent injuries to their child in a crash?

3

How much restraining force would a 10-pound infant in a vehicle moving at 40 mph require to keep from moving forward?

4

What are the five ways car seats, booster seats, and seat belts help prevent or reduce injuries?

4

Seat Belt Systems

MODULE OBJECTIVES



- REVIEW the Federal Standard Motor Vehicle Safety Standard (FMVSS) related to seat belts.
- RECOGNIZE types of seat belt systems.
- DESCRIBE functions of seat belt parts.
- TEST seat belt retractors and latch plates for lockability.
- IDENTIFY approved additional locking steps for seat belts.
- EXPLAIN best practices about seat belt systems to caregivers.

All seat belts used for car seat installation must be locked at a fixed length. One of your most critical tasks as a CPS Technician will be to educate caregivers on the importance of locking the seat belt when installing a car seat. In order to do so, you must be comfortable identifying and understanding the functions of seat belt parts.

Federal Standard for Seat Belts

NHTSA sets **Federal Motor Vehicle Safety Standards (FMVSS)** which are minimum safety requirements for motor vehicles or items of motor vehicle equipment including seat belts and other safety features.

- **FMVSS 208** regulates seat belts and frontal air bags.
- Correct installation of a car seat with a seat belt requires the lap portion of the seat belt to be locked at a fixed length at all times. That means it stays at that length during regular travel.

TECH TIP

To look up federal standards, use the **Quick Reference Guide to Federal Motor Vehicle Safety Standards and Regulations** located at [cpsboard.org](https://www.cpsboard.org).

- Beginning with 1996 vehicle models, all passenger seat belt systems must lock to secure car seats. This is called the **lockability requirement**.
- Driver seat belt systems are not required to lock because car seats are not installed in this position.

Types of Seat Belt Systems

There are two types of seat belt systems found in vehicles.

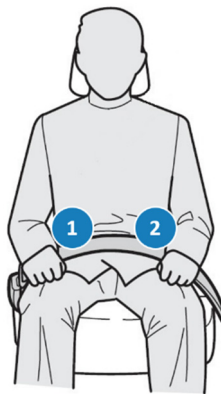
Lap Belt

- A **lap belt** offers 2-point protection because it contacts the body in two places—one at each hip.
- Does not provide upper body protection.

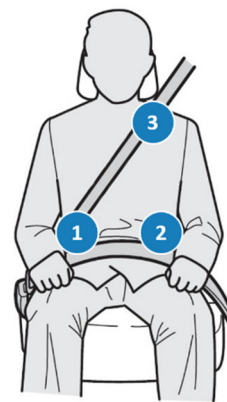
Lap-and-Shoulder Belt

- A lap-and-shoulder-belt offers 3-point protection because it contacts the body in three places—at each hip and at the shoulder.
- Provides upper body protection.

GOOD, BETTER, BEST
A lap belt is better than no seat belt at all, but a lap-and-shoulder belt provides the best protection with appropriate fit.



2-point lap belt



3-point lap-and-shoulder belt

Seat Belt Parts

Seat belts have five main parts that work together to provide protection in a crash. Before beginning any car seat installation with a seat belt, be sure all of the parts shown below are in good working order.



TECH TIP

The lockability requirement requires all vehicles since model year 1996 have a locking feature in every passenger seat belt that can be used to install a car seat.

The locking feature is found in either the retractor or the latch plate.

Remember—if you are working with a vehicle made before 1996, seat belt lockability was not required and an additional step may be needed to secure the car seat.

A



The **RETRACTOR** gathers and stores extra seat belt webbing. In addition, all retractors lock the seat belt at a fixed length in a crash.

- Retractors, like the one pictured, are usually covered in a vehicle and are not easy to see.
- Most lap-and-shoulder seat belts have only one retractor.
- Occasionally, lap-and-shoulder belts have two retractors—one for the lap belt and one for the shoulder belt.

B



WEBBING is the fabric part of the seat belt that secures the person or holds the car seat or booster seat in place.

D



The **BUCKLE** accepts the latch plate and holds the seat belt in place.

C



The **LATCH PLATE** connects the seat belt webbing to a buckle in the vehicle.

E



An **ANCHOR** attaches the seat belt to a strong location in the vehicle or on the vehicle seat.

Types of Retractors

In many vehicles, the retractor provides the locking part needed to secure a car seat in place.

EMERGENCY LOCKING RETRACTOR (ELR)

You might be most familiar with an **emergency locking retractor (ELR)** since you probably use it every day as a driver.

- As the name implies, an emergency locking retractor locks only in a sudden stop, acceleration, turn, or crash.
- This retractor type does not provide any locking feature to secure a car seat without an additional step.

AUTOMATIC LOCKING RETRACTOR (ALR)

Automatic locking retractors (ALR) tend to be found in older vehicles.

- An ALR will lock once the seat belt webbing has been pulled out approximately 12–18 inches. This retractor will stay locked until it is reset by allowing the webbing to feed almost all the way back in.
- The 12- to 18-inch space where the retractor does not lock is known as the **dead zone**. This may mislead you into thinking the retractor has no lockability if the seat belt webbing is pulled out less than that amount.
- An ALR provides the locking feature necessary to secure a car seat.

TECH TIP

If you pull the webbing out too quickly, you may mistakenly believe the retractor is locking.

Work slowly to make sure you pull the webbing out all the way and test gently without quickly pulling on the belt.

SWITCHABLE RETRACTOR

A **switchable retractor** is the most common type of retractor you will encounter in the field. A switchable retractor gets its name from its ability to easily “switch” from ELR mode to ALR mode.

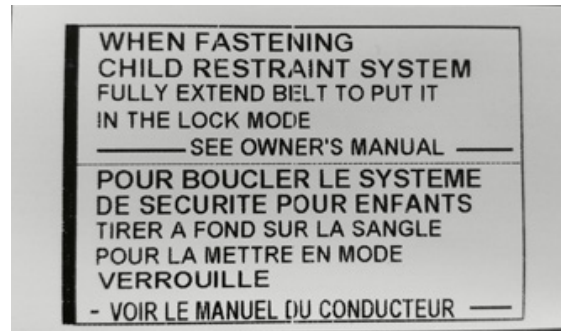
- Switchable retractors in ELR mode are used for adults and older children who have outgrown car seats. They will lock only in an emergency such as a sudden stop, acceleration, turn, or crash and cannot be used to secure a car seat without an additional belt locking step.
- To secure a car seat with a switchable retractor, lock the retractor by slowly and gently pulling out all of the shoulder belt webbing to “switch” the retractor to ALR mode. Just like an ALR retractor, a switchable retractor in ALR mode provides the locking feature necessary to secure a car seat.

TECH TIP

When an ALR retractor or a switchable retractor in the ALR mode is locked, the seat belt will only shorten and cannot be lengthened.

To reset to the unlocked position, unbuckle the belt and release the webbing.

*Check the seat belt for a label.
Sometimes this will give you a clue
about the type of retractor.*



Label for switchable retractor

NO RETRACTOR

Some lap belts have no retractor to store the excess seat belt webbing, leaving the excess webbing visible.

- This type of seat belt is usually found in the front or rear center seat of some older vehicles.
- Lap belts without a retractor will always have a latch plate that provides the locking feature necessary to secure a car seat.



Lap belt without a retractor

Test for Retractor Lockability

To properly install a car seat, the lap portion of the seat belt must be locked at a fixed length at all times. Use the following steps to confirm if a retractor has a lockability feature to secure a car seat.

Step 1

Slowly and gently pull **all** the webbing out of the retractor. Do not pull the webbing out quickly, as this could trigger the emergency locking feature.

Step 2

Slowly release a few inches of the webbing into the retractor. Listen for a clicking sound.

Step 3

While still holding the webbing, gently try to pull the webbing out again.

LOCKING RETRACTOR

You heard a clicking sound when releasing the webbing back into the retractor, and the retractor **does not** allow you to pull the webbing back out. You have a **locking retractor** that you may use to install a car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

NON-LOCKING RETRACTOR

You did **NOT** hear a clicking sound when releasing the webbing back into the retractor, and the retractor **does** allow you to pull the webbing back out. You have a **non-locking retractor**.

FURTHER LOCKABILITY CHECKS ARE NEEDED.

Always check the vehicle owner's manual for information about installing a car seat using the seat belt.



LEARN • PRACTICE • EXPLAIN—RETRACTORS

With a partner, practice explaining seat belt retractors to each other. Focus on how to test for lockability.



Progress Check

1

In what year did the lockability requirement go into effect?

2

What type of retractor cannot be used to secure a car seat without an additional step?

3

What are the two types of retractors that can lock the seat belt to install a car seat?

4

How can an automatic locking retractor (ALR) or a switchable retractor in the ALR mode be unlocked?

5

What are the three steps to test for retractor lockability?

Types of Latch Plates

You learned that a latch plate connects the seat belt webbing to the buckle in a vehicle. If you have tested the retractor and it does not lock, the next step is to check the latch plate as an alternative method to lock the seat belt.

There are different types of latch plates you will encounter: **locking latch plates** and **non-locking latch plates**.

LOCKING LATCH PLATES

A locking latch plate on the seat belt can be found in older vehicles, on most lap belts, and in the center seat of some newer vehicles.

- Not all locking latch plates look the same. Some have a locking bar while others have a sliding piece. Both can be made of metal or plastic.



Despite their differences in appearance, all of these photos show examples of locking latch plates.



- Locking latch plates will lock when the latch plate is flat and in line (flat with the lap belt parallel to the webbing) with the lap belt webbing.
 - **EXAMPLE:** When an adult is buckled into a vehicle seat using the seat belt with a locking latch plate, the latch plate will lie flat on the hip, in line with the webbing, and will lock.
- The latch plate will unlock if the latch plate is tilted at an angle different from the webbing. The latch plate must lie flat to stay locked.
- Another easy way to test for a locking latch plate is to sit in the vehicle and buckle yourself in. Pull gently on the lap belt. If it stays tight, it is locking. If it loosens, it is a non-locking latch plate.
- A locking latch plate will allow you to secure the car seat using the seat belt, even if the retractor does not lock.

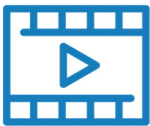
TECH TIP

Even if you see moving parts on a latch plate, do not assume it is a locking latch plate.

Check the retractor. If it is a switchable retractor, it may be a dynamic or sliding latch plate, not a locking latch plate.



Parallel/flat and in line with webbing



VIDEO—LOCKING LATCH PLATE

This video demonstrates the locking latch plate.

NON-LOCKING LATCH PLATES

As the name implies, a non-locking latch plate has no locking feature. If neither the retractor nor latch plate has a locking feature, you will need to use another approved method to lock the lap portion of the seat belt at a fixed length to secure a car seat.

Types of non-locking latch plates are: **sliding**, **dynamic**, and **sewn-on**.

Sliding Latch Plate

Sliding latch plates are found only on lap-and-shoulder seat belts.

- A sliding latch plate is a single, solid piece with no moving parts. The seat belt webbing moves freely through the latch plate and will not lock.
- This latch plate type does not provide any locking feature to secure a car seat without an additional step.



Sliding latch plate

Dynamic Latch Plate

Dynamic latch plates are found only on lap-and-shoulder seat belts in newer model year vehicles.

- Vehicle manufacturers may call these dynamic or **crash-locking latch plates** in their vehicle owner's manuals.
- A dynamic latch plate has a bar similar in appearance to the bar found on a locking latch plate. Dynamic latch plates are designed to lock the lap belt during a crash.
- Be careful—do not confuse dynamic latch plates with locking latch plates. Some dynamic latch plates may seem to lock the seat belt when you buckle them and test for lockability, but dynamic latch plates do not lock a seat belt at a fixed length.
- When installing car seats, dynamic latch plates are treated just like sliding latch plates and require an additional step to lock the seat belt.



Examples of dynamic latch plates—front and back views

Sewn-on Latch Plate

Sewn-on latch plates are found both on lap belts and lap-and-shoulder seat belts, typically in older vehicles.

- Sewn-on latch plates are sewn together onto the seat belt webbing.
- Similar to sliding latch plates, sewn-on latch plates have no moving parts.
- With a sewn-on latch plate, test the retractor, not the latch plate, for lockability.
 - If the lap belt retractor locks, you can secure a car seat using this seat belt.
 - If the lap belt retractor does not lock, you will not be able to secure a car seat in this seating location.



Sewn-on latch plate on lap-and-shoulder seat belt

TECH TIP

For lap-and-shoulder belts with sewn-on latch plates, remember to check both retractors—one on the lap belt and one on the shoulder belt.

Test for Latch Plate Lockability

To properly install a car seat, the lap portion of the seat belt must be locked at a fixed length at all times. If you cannot lock the belt at the retractor, use the steps that follow to confirm if a latch plate can be locked to secure a car seat.

Step 1 Buckle the seat belt.

Step 2 Give a firm tug on the lap portion of the seat belt while pulling up on it.

LOCKING LATCH PLATE

The webbing **does not slide** through the latch plate. You have a locking latch plate that you may use to install a car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

NON-LOCKING LATCH PLATE

The webbing **slides** through the latch plate. It is a non-locking latch plate.

YOU MUST PROCEED WITH ADDITIONAL APPROVED LOCKING TECHNIQUES.

Always check the vehicle owner's manual for information about installing a car seat using the seat belt.



ACTIVITY—IDENTIFY LATCH PLATES AND RETRACTORS

1. For each vehicle, write the vehicle number and mark the seating location in the left column of the table.
2. For each vehicle, locate the assigned seat belt. Test the seat belt and circle the type of latch plate and retractor for the seating location in the right column of the table.

Scenario #1										
Vehicle #	LATCH PLATE: Locking Sewn-on Sliding/Dynamic									
Seating Position <table border="1"> <tr> <td>D Driver</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	D Driver									RETRACTOR: ALR ELR Switchable None
D Driver										

Scenario #2										
Vehicle #	LATCH PLATE: Locking Sewn-on Sliding/Dynamic									
Seating Position <table border="1"> <tr> <td>D Driver</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	D Driver									RETRACTOR: ALR ELR Switchable None
D Driver										

Scenario #3										
Vehicle #	LATCH PLATE: Locking Sewn-on Sliding/Dynamic									
Seating Position <table border="1"> <tr> <td>D Driver</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	D Driver									RETRACTOR: ALR ELR Switchable None
D Driver										

Scenario #4										
Vehicle #	LATCH PLATE: Locking Sewn-on Sliding/Dynamic									
Seating Position <table border="1"> <tr> <td>D Driver</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	D Driver									RETRACTOR: ALR ELR Switchable None
D Driver										



LEARN • PRACTICE • EXPLAIN—LATCH PLATES

*With a partner, practice explaining latch plates to one another.
Focus on how to test for lockability.*



Progress Check

1

Name the four types of latch plates found on seat belts.

2

In what position does a locking latch plate need to lie to ensure it is locked?

3

What is one way to determine if a latch plate can be locked for car seats?

4

What types of latch plates do not lock?

Inflatable Seat Belts

Another type of seat belt found in some rear seats is an **inflatable seat belt**.

Inflatable seat belts utilize two separate belt systems—a lap belt and a shoulder belt. Each belt has a sewn-on latch plate and retractor.

■ Lap belt

- Secures the car seat with a switchable retractor
- Does not inflate

■ Shoulder belt

- Contains a small air bag designed to open in frontal, side, and rollover crashes
- Spreads belt loads over a greater area of the chest than standard seat belts to provide additional head and neck support during a crash
- Is made of webbing significantly thicker than a regular belt
- Has an emergency locking retractor



Inflatable seat belt

Many car seat manufacturers do not allow use of their products with an inflatable seat belt. Check the car seat instruction manual or website for guidelines whenever an inflatable seat belt is present. Check the car seat manufacturer's website FAQs and contact Customer Service if you do not find an answer.

Additional Belt Locking Steps

You have learned how to identify retractors and latch plates and how to test for lockability. However, there are times when neither the retractor nor the latch plate locks the lap belt in place.

With a lap-and-shoulder belt, adding a **locking clip** or using a car seat **lock-off** may serve as additional ways to lock the seat belt at a fixed length.

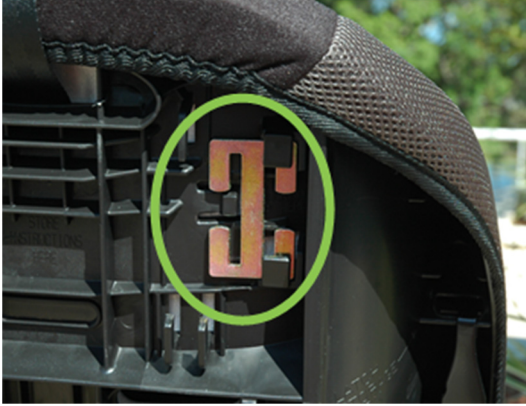
Locking Clips

A locking clip “locks” a lap-and-shoulder seat belt at a fixed length to secure a car seat when the seat belt retractor and latch plate do not have a locking feature.

- Locking clips may be provided with the car seats by the car seat manufacturer. Check the car seat instruction manual to locate the locking clip. If needed, car seat manufacturers may provide one free of charge.
- Three things must be present to use a locking clip.
 1. Retractor = ELR (non-locking)
 2. Latch Plate = Sliding or Dynamic (non-locking)
 3. Lap-and-shoulder belt is one piece of webbing.
- Locking clips must be placed according to the car seat manufacturer’s instructions.
 - Locking clips are required to be no more than one inch (1") from the latch plate.
 - Always check car seat manufacturer’s instructions in case less than one inch is mandated.
- The locking clip may come off in a crash, which is acceptable as it has already done its job (locking the seat belt at a fixed length until the retractor locks in a crash).

TECH TIP

Lock-offs and locking clips are safe to use as long as you follow the car seat manufacturer’s directions. They perform the same function. Do not use a locking clip if a lock-off is present on the car seat.

*Locking clip stored**Locking clip*

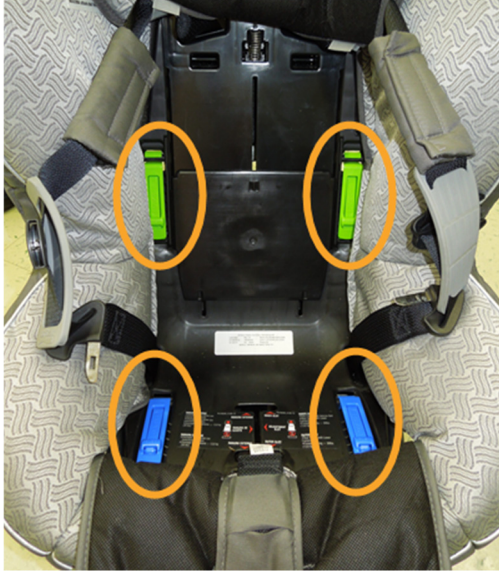
Lock-Offs

Built-in locking features, commonly referred to as lock-offs, are found on some car seats. Lock-offs are permanent parts of the car seat that lock a lap-and-shoulder belt at a fixed length.

- There are many designs. Though they look different, they do the same thing.
 - A lock-off can be on either side of the car seat or in the center of the belt path.
- Be sure to read the car seat instruction manual before using the lock-off to determine if there are any scenarios where the lock-off is not permitted to be used.
- When you use a lock-off, the car seat manufacturer may allow you to also lock the retractor.
 - Always check the car seat instruction manual.

TECH TIP

Some car seat manufacturers use belt tensioners on their car seats to aid installation. Belt tensioners may look like lock-offs but require locking the seat belt. Always check the car seat instruction manual for installation instructions.



Lock-offs under the car seat padding

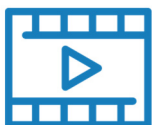


Lock-off on the side of a rear-facing only car seat base



Lock-off in the center of the belt path on a rear-facing only car seat base

Remember, correct installation of a car seat requires the lap portion of the seat belt to be locked at all times.



VIDEO—USING A LOCKING CLIP

This video demonstrates locking clips and lock-offs.

Putting it All Together—What Locks the Seat Belt

To properly install a car seat, the lap portion of the seat belt must be locked at a fixed length at all times.

To test a seat belt in a vehicle and find what locks it, follow the steps in this chart.

In the rare case when you cannot lock the belt, another seating position must be used.



Troubleshooting Locking Latch Plates

Sometimes when working with a locking latch plate, you may have difficulty getting the latch plate to lock. Usually this is because the latch plate is tilted. (Remember that locking latch plates must lie flat to lock.)

To address this challenge, there are three fixes.

Fix 1: Flip the Latch Plate

Flipping the latch plate may help align the latch plate and seat belt, allowing the latch plate to lock.

First, check the vehicle owner's manual. Some vehicle manufacturers do not allow flipping the latch plate. If the vehicle owner's manual does not prohibit this, flipping the latch plate is allowed.



Flipped latch plate

- Buckle and tighten the seat belt.
- Unbuckle the seat belt.
- Flip the latch plate over.
- Buckle the seat belt.
 - You may need to loosen the buckle a small amount to buckle it.
- Confirm the latch plate is locked by pulling up on the lap belt.

Fix 2: Twist the Buckle Stalk

If the latch plate is in the belt path of the car seat or interferes with the lock-off or use of the locking clip, twisting the buckle stalk webbing may be helpful. This will make the buckle stalk webbing shorter and help to lower the buckle away from the belt path.

Check the vehicle owner's manual to see if buckle stalk twisting is allowed. Some vehicle manufacturers do not allow twisting the buckle stalk. If the vehicle owner's manual does not prohibit it, you may do so.



Twisted buckle stalk

- Twist the buckle stalk a full turn each time.
- Don't over-twist the buckle stalk. Always use a minimum number of twists, with a maximum of three.
 - The Society of Automotive Engineers (SAE) Child Restraint Subcommittee agreed on the maximum of three twists. (Resources at [cpsboard.org](https://www.cpsboard.org).)
- Be sure the buckle release button is easily accessible after twisting and buckling.

Fix 3: Locking Clip

As you may recall, you can only use a locking clip with a lap-and-shoulder belt. If flipping the latch plate and/or twisting the buckle stalk does not lock the seat belt, a locking clip may be used with a locking latch plate on a lap-and-shoulder belt.

**LEARN • PRACTICE • EXPLAIN—LOCKABILITY**

Using the flow chart on page 19 as a guide, explain to a partner how to determine what locks the seat belt in the following scenarios.

1. Lap-and-shoulder belt with switchable retractor and sliding latch plate
2. Lap-only belt with no retractor and locking latch plate
3. Lap-and-shoulder belt with ELR retractor and sliding latch plate

Keep it simple. It is most important for caregivers to remember how to lock their seat belt.

- Caregivers might get confused if you use technical terms and abbreviations to explain how seat belts lock.
- First, explain and demonstrate how to lock the seat belt. Then, make sure caregivers practice the new skill and explain it back to you.

Demonstration—Car Seat Installation

Your Instructor will demonstrate how to properly install a car seat with an automatic locking retractor, emergency locking retractor, and a switchable retractor.



Progress Check

Fill in the correct answers from the right-hand column for each of the questions.

1

Name the three latch plates that do not lock before a crash.

2

Which retractor has no locking feature under normal driving conditions?

3

Which retractor changes from one mode to another?

4

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

5

What may be built into a car seat or come with the seat to lock a belt before a crash? (Select two answers)

ANSWER CHOICES

Emergency locking retractor

Automatic locking retractor

Switchable retractor

Dynamic latch plate

Locking latch plate

Sliding latch plate

Sewn-on latch plate

Locking clip

Lock-off

Flipping the latch plate

NOTES 

5

Air Bags

MODULE OBJECTIVES



- DESCRIBE the purpose and function of air bags.
- LOCATE air bag information in vehicle owner's manuals and vehicles.
- IDENTIFY features, warnings, and markings related to air bags.
- EXPLAIN best practices for air bags.

There are many safety features built into the vehicle that protect occupants in a crash. For example, vehicles have laminated windshields, dashboard padding, door trim padding, and air bags. Air bags pose particular concerns for the safe travel of children.

Purpose and Function of Air Bags

An air bag is a vehicle safety device made up of a flexible fabric envelope designed to rapidly **deploy**/inflate when the vehicle determines there has been a crash. Air bags are for adults. The crash protection provided by air bags is tested on the 5th percentile adult female (107 pounds) and 50th percentile male (167 pounds).

Air bags are a passive safety feature, meaning the occupant doesn't have to do anything to make it work

TECH TIP

Air bags do not deploy in every crash. For example, frontal air bags usually do not deploy in rear-end crashes.

Air bags and seat belts work *together* to protect the occupants. This is why air bags are called *supplemental* restraint systems. Using the seat belt with the air bag allows the crash forces to be spread over a larger area of the occupant's body. This allows the occupant to ride down a crash, instead of having the force concentrate on a smaller area of the body.

***Seat belts and air bags
work together to
provide protection to
vehicle occupants***



Air Bag Markings

Check for Air Bag Warnings and Markings

- Each vehicle manufacturer places labels in different positions and may call their air bag system something different.

EXAMPLES

of acronyms for **frontal air bags**

SRS	Supplemental Restraint System
SIR	Supplemental Inflatable Restraint

EXAMPLES

of acronyms for **side/curtain air bags**

SABIC	Side Air Bag Inflatable Curtain
SAB	Side Air Bag



Dashboard Deployed

For frontal air bags that deploy from the dashboard, the warning label pictured at right will always be located on the sun visor. You may find additional markings on or near the cover of the air bag.



Side Air Bag Warnings and Markings

- Like frontal air bags, side air bags usually have a label or marking to show where the air bag comes out in a crash. However, vehicle manufacturers are not required to label side air bags. Always check the vehicle owner's manual to confirm the location of air bags in the vehicle.
- Warning labels for air bags that deploy in side crashes may be found almost anywhere in the vehicle. Some possible locations are listed below.
 - On the door frame
 - On the end of the dashboard
 - On the side of the seat
 - Near the edge of the roof
 - On the side of the door

Types of Air Bags

FRONTAL AIR BAGS

- Air bags for the driver and front passenger offer powerful protection to front seat occupants who are correctly seated with seat belts buckled.
- Frontal air bags typically are found in the steering wheel or dashboard.
- Some **passenger air bags** cover both the middle and right front passenger seating positions while others only cover the right front seating position.



Frontal and side curtain air bags, deployed



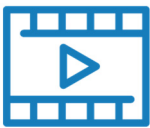
Frontal passenger air bag warning on visor

1. Air Bags that are Always On

The passenger air bag in these vehicles cannot be turned off. They can be found in both older and newer model vehicles.

Best Practice Recommendations

- Never place a **rear-facing** car seat in the front passenger seat in a vehicle with a frontal air bag. If the passenger air bag deploys in a crash, the child may be killed or severely injured by the force of the air bag.
- Children under 13 years of age should ride in the back seat away from the frontal air bag whenever possible. Teenagers are usually mature enough to stay in position and use the seat belt correctly, and are big enough for the air bag to protect them.
- If a **forward-facing** child must sit in the front passenger seat, make sure they are properly restrained in an appropriate car seat or booster seat, and then move the vehicle seat as far back from the air bag as possible. Never allow a child to lean forward towards the air bag.
 - Check the car seat instruction manual. Some car seat manufacturers warn against placing a car seat or booster seat in front of an air bag.
- Avoid leaning against an air bag's opening or putting other objects in front of an air bag's compartment.



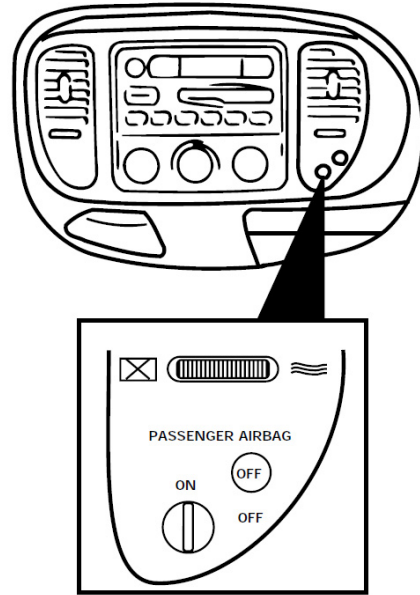
VIDEO—FRONTAL AIR BAG + CAR SEAT

The video shows a crash test with a frontal air bag and a car seat in the front seat.

2. Air Bags that Turn On and Off Using a Manual Switch

Some vehicles may have a switch to turn the passenger air bag on and off. A frontal air bag manual switch is often seen in vehicles without a back seat (e.g., regular cab pickup trucks).

Caregivers must check the vehicle owner's manual to understand the proper operation of the on/off switch in their vehicle. Most are operated by the vehicle's ignition key.



Typical passenger air bag on/off switch

Best Practice Recommendations

- If a forward-facing child must sit in the front passenger seat, check the vehicle owner's manual for instructions on turning the air bag off. The switch must be in the "off" position. There may be a light near the on/off switch that lights whenever the passenger air bag has been turned off.
 - Vehicle manufacturers are no longer allowed to install on/off switches.
 - Aftermarket switches may or may not have lighted indicators and are not commonplace.
- If the "air bag off" indicator is not lit, a child should not be allowed to ride in the front seat.
- Always return the air bag switch to the original "on" position for adult passengers. Forgetting to turn the switch back on for adult passengers is dangerous because the air bag will not be active to protect an adult passenger.

3. Advanced Air Bags

Most newer vehicles are equipped with **advanced air bag** systems. These systems use a complex system of sensors and other technology to automatically adjust the air bag deployment during a crash, based on the front seat occupant. The system may have variable levels of air bag deployment strength or may even turn the air bag system off.

Caregivers need to understand the specific systems and indicators, and what they mean, in their vehicle. Remind them to check their vehicle owner's manual.

TECH TIP

Remind caregivers to use the back seat for children under the age of 13, even if there is an automatic on/off system for a passenger air bag.

Best Practice Recommendations

- Even when the "air bag off" indicator is lit, to err on the side of caution, caregivers should always assume the air bag is on.
- Never place a rear-facing car seat in a seating position with an active or advanced frontal air bag.
- Children under 13 years of age should ride in the back seat away from the frontal air bag whenever possible. Seated properly and wearing a seat belt, teenagers are generally big enough for the air bag to protect them.
- If a forward-facing child must sit in the front passenger seat, make sure they are properly restrained in an appropriate car seat or booster seat and move the vehicle seat as far back from the air bag as possible. Never allow a child to lean forward towards the air bag.
 - Check the car seat instruction manual. Some car seat manufacturers warn against placing a car seat or booster seat in front of an air bag.
- Occupants should avoid leaning against an air bag's opening or putting other objects in front of an air bag's compartment.

SIDE AIR BAGS

Side air bags are designed to fill the space between the occupant and the door and/or window, helping to prevent injuries to the head and chest and/or ejection from the vehicle.

Side air bags may deploy in side impact, rollover, and frontal crashes.



Side and curtain air bags deployed

Side air bags can be found in various places such as in the door, inside the vehicle seat back, and in the roof—large “inflatable curtains” or “safety canopies”.

Front Center Air Bag (Side Impact)

Front center air bags offer protection for the front seat occupants by opening from the right (inside) side of the driver’s seat and deploy forward, between the seat and the center console. These air bags help prevent the driver’s and passenger’s heads from colliding in a side impact crash. They are labeled on the right side of the seat.



Examples of side and curtain air bag locations inside vehicles

Best Practice Recommendations

- As long as the car seat manufacturer and vehicle manufacturer both allow, properly restrained children can sit near side air bags without an unreasonable increased risk of injury because they are outside of the air bag deployment zone.
- Always check the vehicle owner's manual to confirm the locations of air bags in the vehicle. Remember, they may not be labeled.
 - Check if the vehicle manufacturer has recommendations about where a child should sit relative to side air bags or how a child should be positioned relative to the bags.
- If either the vehicle or car seat manufacturer does not allow the use of a car seat or booster seat next to the side air bag, use a different seating position in the vehicle.

Knee Air Bags

Knee air bags significantly reduce the risk for injuries to the knee, thigh, and hip. They also work in tandem with the other frontal air bags to control the position of the occupant and absorb energy in a crash. They are located under the steering wheel or **glove box**.



Example of a knee air bag

Seat Cushion Air Bags

Seat cushion air bags are typically found under the driver's front seat and/or the passenger's front seat. These small air bags inflate just enough to raise the front portion of the seat cushion. When the seat inflates, it keeps the occupant in the correct position during the frontal crash.

Sign Up for Recall Notices

- It is important to sign up for vehicle recall notices at [recalls.gov](https://www.recalls.gov).
- The largest ever vehicle-related **recall** was for air bags.

TECH TIP

Remind caregivers to sign up for vehicle-related recall information at [recalls.gov](https://www.recalls.gov).

The screenshot shows the homepage of [www.Recalls.gov](https://www.recalls.gov). At the top is the logo and the tagline "Your Online Resource for Recalls". Below this is a navigation bar with tabs for: Consumer Products, Motor Vehicles, Boats, Food, Medicine, Cosmetics, and Environmental Products. On the left side, there are four red oval buttons: "Recent Recalls", "Search for Recalls", "Sign Up for E-Mail", and "Información en Español". To the right of these buttons, there is explanatory text about the site's purpose and instructions on how to use the tabs. At the bottom, there are logos for USA.gov, NHTSA (National Highway Traffic Safety Administration), the U.S. Coast Guard, the FDA (Food and Drug Administration), the USDA (United States Department of Agriculture), and the EPA (Environmental Protection Agency). Below the logos is a horizontal list of links corresponding to the navigation tabs: Consumer Products | Motor Vehicles | Boats | Food | Medicine | Cosmetics | Environmental Products.



LEARN • PRACTICE • EXPLAIN—AIR BAG TYPES

Review air bag types and best practice recommendations with a partner. Practice explaining air bag types to one another.



ACTIVITY—LOCATE AIR BAG MARKINGS

1. Work in small groups.
2. Using two vehicle owner's manuals, look up and document the vehicle's air bag information.
3. In addition to information you find in the vehicle owner's manuals, locate and document missing or additional information from inside the vehicle.

	Vehicle 1	Vehicle 2
1. What is the vehicle make, model, and year?		
2. Where are the labels for frontal air bags? What do they say?		
3. What pages in the vehicle owner's manual discuss the frontal air bags?		
4. Which type of passenger air bag system does the vehicle have?	<input type="checkbox"/> Always on <input type="checkbox"/> Manually switched on/off <input type="checkbox"/> Automatically switched on/off	<input type="checkbox"/> Always on <input type="checkbox"/> Manually switched on/off <input type="checkbox"/> Automatically switched on/off
5. Where are the labels for side air bags? What do they say?		
6. What pages in the vehicle owner's manual discuss the side air bag system?		



Progress Check

1

How do air bags reduce the risk of injury to vehicle occupants?

2

When do air bags pose a danger to child occupants?

3

Where are air bags located in the vehicle?

4

Why shouldn't children under 13 ride in the front seat?

5

Why shouldn't a rear-facing car seat be installed in front of an active air bag?

6

Lower Anchors and Tethers

MODULE OBJECTIVES



- REVIEW the Federal Motor Vehicle Safety Standards (FMVSS) related to lower anchors and tethers.
- RECOGNIZE lower anchor and tether anchor locations and markings in vehicles.
- RECOGNIZE when to use lower anchors and tether anchors.
- DESCRIBE when borrowing of lower anchors is permitted.
- DESCRIBE special issues related to tethers and pickup trucks.
- RECOGNIZE common misuse with lower anchors and tethers.
- EXPLAIN lower anchor and tether anchor best practices.

*In Module 4, you learned about how seat belt systems are used to secure car seats. In an effort to simplify car seat installation, NHTSA requires most vehicles to have an attachment system dedicated to car seats. Car seat manufacturers and vehicle manufacturers worked together to call this system **LATCH** (Lower Anchors and Tethers for CHildren).*

Federal Standards Related to LATCH

NHTSA regulates the LATCH system through two Federal Motor Vehicle Safety Standards (FMVSS).

- **Vehicles:** **FMVSS 225** sets the design and performance standards of the LATCH system in vehicles.
 - **Design standards** mandate how the product should look, promoting continuity between manufacturers—for example, the distance between lower anchors.
 - **Performance standards** mandate how the product should perform in a crash.
- **Car Seats:** **FMVSS 213** requires car seats with harnesses (or their **detachable bases** when present) to have LATCH parts. FMVSS 213 sets performance standards.

TECH TIP

Both seat belts and LATCH provide a safe way to install a car seat. Select the method that results in the best installation following both vehicle owner's manuals and car seat instruction manuals—and that the caregiver is able to use properly in their vehicle.

The LATCH System – Vehicles

- Vehicle parts of LATCH are called the **lower anchors** and **tether anchors**.
- A vehicle LATCH system is made up of two lower anchors and one tether anchor.
- Most vehicles made after September 2002 must have a minimum of two complete LATCH systems (lower anchors and tether anchor) and one additional tether anchor that can be used with a seat belt.
- In most vehicles, the designated LATCH seating positions are in the outboard seats (by the windows). However, sometimes LATCH is provided in the center seating position.
- Always check the vehicle owner's manual for help in locating lower anchors and tether anchors.

TECH TIP

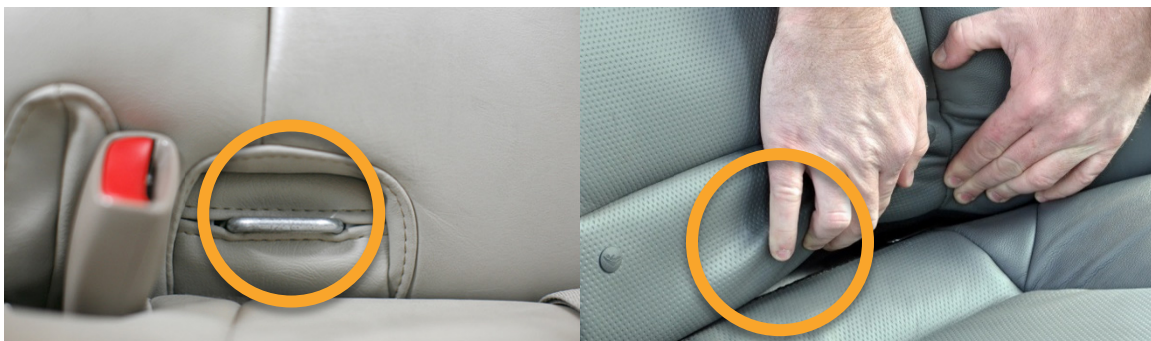
If lower anchors are present in a seating position, typically there will be a tether anchor for that seating position.

LOWER ANCHORS

- Lower anchors are a standardized pair of metal bars located on the vehicle seat used in conjunction with **lower anchor connectors** on a car seat.

Lower Anchor Locations

- The lower anchors are generally located in the area where the seat cushion meets the seat back, known as the **seat bight**.
 - Lower anchors are required to be spaced 11" apart from center to center.



Some lower anchors are visible

Many lower anchors are inside the bight (not visible)

Lower Anchor Markings

Lower anchors may be visible or hidden. If the lower anchors are not visible, buttons or tags (often with words or symbols) must be attached to the **seat padding** nearby.



A common marker for lower anchors

TETHER ANCHORS

Tether anchors are hardware in the vehicle that provide an approved location to attach a tether on a car seat.

- Tether anchors have been required in most vehicles since September 2000. (Convertible cars, large vans, and some school buses are exempt from this requirement.)
- A seating position that has a tether anchor but no lower anchors is not a LATCH position. In that seating position, use the seat belt to secure a car seat, and tether if forward-facing.
- Most vehicles made between 1989 and 2000 can be retrofitted with tether anchors. The caregiver should contact the vehicle manufacturer to see if a **retrofit** kit is available, and find out related costs.

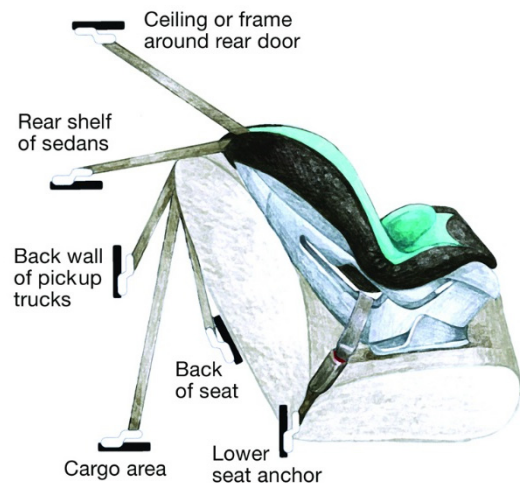
TECH TIP

To find tether anchor use information in a vehicle owner's manual, search the index for "top tether" or find the child restraint section of the manual. Tethers are often discussed toward the end of the child restraint section.

Tether Anchor Locations

Following are possible tether anchor locations.

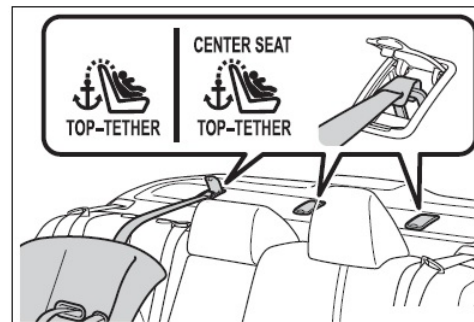
- Ceiling above rear seating positions
- Rear window shelf
- Back of vehicle seat
- Back wall (pickup trucks)
- Floor of cargo area
- Under the vehicle seat



Tether anchors can be found in many vehicle locations, as shown



Toyota vehicle owner's manual showing location of lower anchors



Toyota vehicle owner's manual showing location of tether anchors

Tether Anchor Markings

Tether anchors may be visible or hidden under a flap or door.

- Regulations do not require tether anchors to be marked, but most vehicle manufacturers follow voluntary industry standards that encourage marking tether anchors, especially those that are covered.
- The markings may be words or symbols.



*A common marker
for lower tether
anchors*



*These tether anchors (circled) are on the back of the seat back.
They should not be confused with the cargo hooks on the floor!*

TECH TIP

Other vehicle hardware can be confused with tether anchors and may not be strong enough to withstand a crash. Always check the vehicle owner's manual to identify tether anchors.



*An unmarked tether anchor on
the bottom of a seat back*



A tether anchor symbol marks a tether under a flap

**LEARN • PRACTICE • EXPLAIN—FINDING LATCH**

With a partner, practice explaining how to find lower anchors and tether anchors in a vehicle.

The LATCH System—Car Seats

LATCH parts on car seats and booster seats are called **lower anchor connectors** and tethers.

- Always check the car seat instruction manual to learn how the lower anchor connectors and tether work on the seat.
- Car beds, harnesses, and boosters are not required to have LATCH parts.

TECH TIP

When LATCH parts (lower anchors and/or tethers) are provided on booster seats, anchor weight limits do not apply because the seat belt manages the crash force. The LATCH parts are holding the booster seat in place.

LOWER ANCHOR CONNECTORS

Lower anchor connectors are parts on the car seat or booster seat that are used to secure the seat to the lower anchors in the vehicle.

- Lower anchor connectors are located on the lower part of the car seat or booster seat.
 - **Rear-facing only** car seats with detachable bases may have the lower anchor connectors only on the detachable base.
- Lower anchor connector styles may vary by manufacturer.
- Lower anchor connectors may be part of a flexible or rigid attachment system.
 - With a flexible attachment system, the lower anchor connectors are attached to the seat with webbing that is adjustable.
 - With a rigid attachment system, the lower anchor connectors are part of a metal frame that is not adjustable.
- Lower anchor connectors may be used for rear-facing or forward-facing (with a tether) installation.
 - Using the lower anchors and seat belt for the same installation is only allowed when approved by both the car seat and vehicle manufacturers.



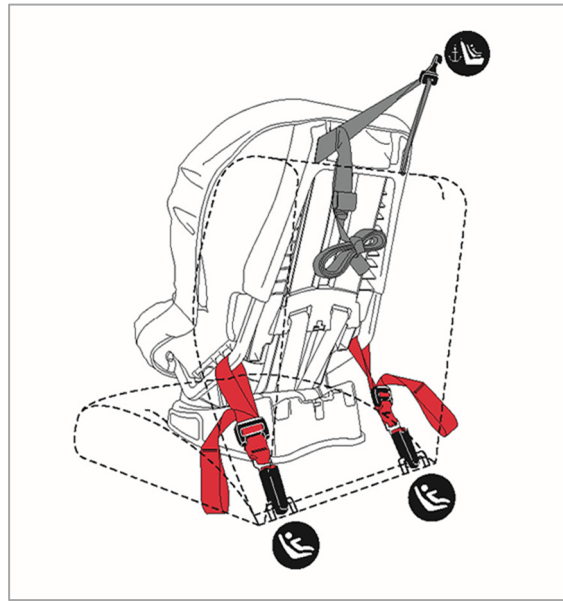
The lower anchor connectors will be located on the lower part of the car seat

TECH TIP

Caution: Do not connect the lower anchor connectors upside down. Typically, car seat manufacturers dictate the orientation of the lower anchor connectors to the lower anchors in the vehicle.



Rear-facing installation using lower anchors



Forward-facing installation using LATCH



Lower anchor connector – hook style



Lower anchor connector – push-on style

These are the most commonly used styles of lower anchor connectors. There are other styles unique to specific car seat manufacturers.



Lower anchor connector – rigid

Lower Anchors Weight Limits

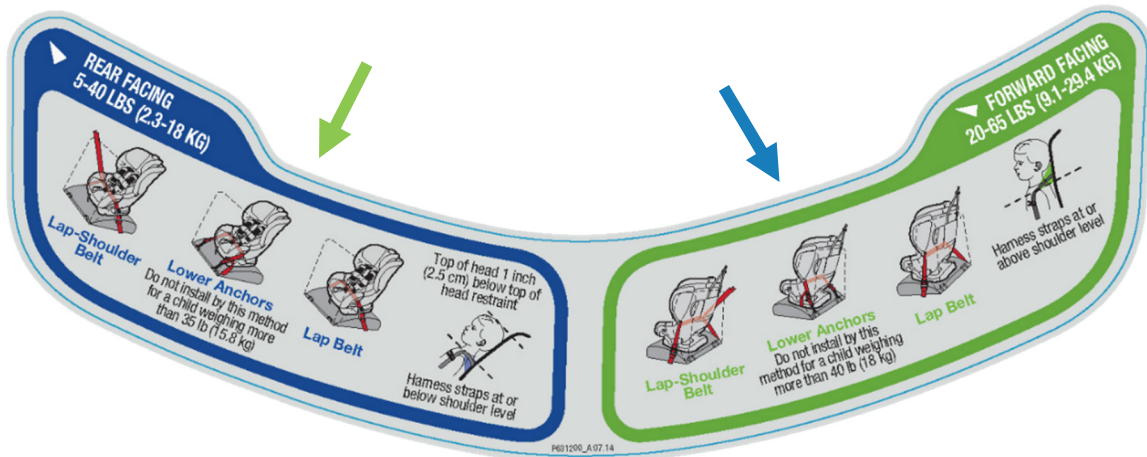
Consideration to weight limits should be made when using lower anchors.

- **Vehicles:** Vehicle manufacturers may specify maximum weight limits for lower anchor use. Most state that the weight of the child plus the weight of the car seat can be no more than 65 pounds to use the lower anchors. Always check the vehicle owner's manual for lower anchor use information.
 - If the vehicle manufacturer does not list a lower anchor weight limit in the vehicle owner's manual, check with the vehicle manufacturer.

Restraint Type	Combined Weight of the Child + Child Restraint	Use Any Attachment Method Shown With An "X" Below			
		LATCH – Lower Anchors Only	Seat Belt Only	LATCH – Lower Anchors + Top Tether Anchor	Seat Belt + Top Tether Anchor
Rear-Facing Child Restraint	Up to 65 lbs (29.5 kg)	X	X		
Rear-Facing Child Restraint	More than 65 lbs (29.5 kg)		X		
Forward-Facing Child Restraint	Up to 65 lbs (29.5 kg)			X	X
Forward-Facing Child Restraint	More than 65 lbs (29.5 kg)				X

2018 Chrysler Pacifica vehicle owner's manual

- **Car Seats:** Since February 2014, car seat manufacturers are required by FMVSS 213 to follow a standardized calculation to determine the child weight limit for installation using lower anchors. Based on the date of manufacture of the car seat, follow these guidelines.
 - For car seats made beginning in February 2014: The weight of the child plus the weight of the car seat cannot exceed 65 pounds. Follow the child weight limit for lower anchor use found on the car seat label. This information also can be found in the car seat instruction manual.
 - If no lower anchor weight limit is stated on the car seat label, the combined weight of the child and car seat does not exceed the standardized limit of 65 pounds when using the car seat per manufacturer guidelines.
 - If the vehicle and car seat maximum weight limits differ, follow the one that is lower.



Since February 2014, the standardized maximum child weight for installation with lower anchors must appear with installation pictograms. The child weight limit may be different for rear-facing and forward-facing use.

- Car seats made before February 2014 were not required to list lower anchor weight limits on the car seat label.
 - Before using the lower anchors, check the car seat instruction manual for use information. If the vehicle and car seat maximum weight limits differ, follow the one that is lower.
 - If neither the vehicle nor car seat manufacturer state weight limits for lower anchor use, you must assume that the lower anchors may be used until the total weight of the child plus the car seat equals 65 pounds.
- If the child exceeds the vehicle or car seat maximum weight limits, install the car seat using a seat belt.
 - This weight restriction does not apply to seat belt systems used with car seats.
 - Continue to use the tether (if permitted by both the car seat manufacturer and vehicle manufacturer).

LOWER ANCHORS FOR CENTER SEATING POSITIONS

- **Vehicles:** In vehicles that lack a designated LATCH system with lower anchors spaced 11" apart in the center seating position, some vehicle manufacturers allow "borrowing" of lower anchors.
 - Borrowing refers to the use of the inner lower anchors of the outboard LATCH systems to install a car seat in the center position.
 - Borrowing the inner lower anchors of the outboard LATCH systems may prohibit the use of the outboard seating positions for other passengers.
 - Always check the vehicle owner's manual to determine if borrowing of lower anchors is allowed.

■ When installing in the rear center seat

There are no LATCH anchors behind the rear center seat. However, the inboard LATCH anchors of the outboard seats, which are 16.1 in. (410 mm) apart, can be used if the child restraint system manufacturer's instructions permit use of those anchors with the anchor spacing stated.

Toyota Camry vehicle owner's manual

- **Car Seats:** Before installing a car seat in the center seating position by borrowing lower anchors, always check the car seat instruction manual to determine if this is allowed.
 - If either the vehicle owner's manual or the car seat instruction manual does not specifically allow borrowing of lower anchors, a seat belt (with the tether, if forward-facing) should be used to secure a car seat in the center seating position.
 - Remember that installation with the vehicle seat belt or lower anchors is equally safe as long as both the vehicle owner's manual and car seat instruction manual are followed.

TECH TIP

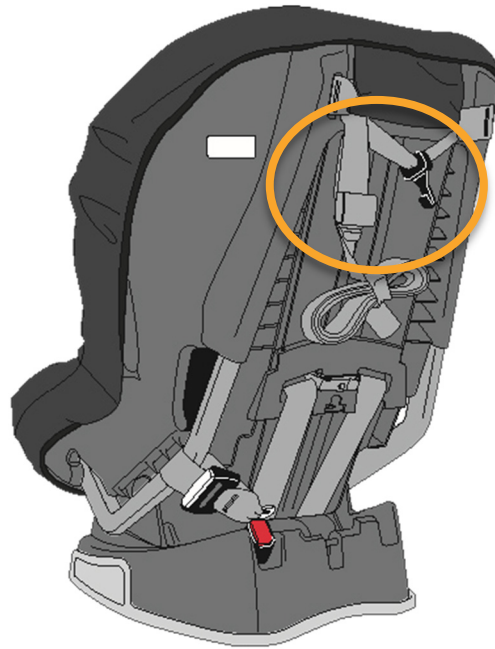
EDUCATING CAREGIVERS ON LATCH

Whenever possible, have the caregiver locate the lower anchors and tether anchors in their vehicle.

Determine whether borrowing of lower anchors in the center seating position is allowed in their vehicle.

TETHERS

- A tether is a part on the car seat that is used to secure the top of a forward-facing car seat against the vehicle seat by attaching to the tether anchors in the vehicle.
- Tethers are located on the upper part of the car seat.
- Tethers are a piece of adjustable webbing with a **tether connector** on one end.
 - The webbing may be a single strap or dual strap.
- Car seats with a harness that can be used forward-facing typically will have a tether.
- Tether styles may vary by manufacturer.
- It is best practice to use a tether whenever possible—whether the forward-facing car seat is being installed with lower anchors or a seat belt.
 - A tether should never be used alone to install a car seat.
- Tethering a forward-facing car seat can reduce the distance that the child's head moves forward in a crash by four to six inches.
- Tethering a car seat may help to make the car seat more stable.
- A few car seat manufacturers allow optional use of the tether when installing car seats rear-facing. If a car seat manufacturer allows rear-facing tethering, check the vehicle owner's manual to confirm that the vehicle manufacturer also permits rear-facing tethering.
- Use caution to not connect tether connectors upside down. Some car seat manufacturers dictate the orientation of the tether connector to the tether anchor in the vehicle.



The tether will be located on the upper part of the car seat

Tether Routing and Head Restraints

A tether should generally be routed straight back from the car seat to the tether anchor in the vehicle. This is referred to as direct routing.

Always remember to check the vehicle owner's manual for model-specific instructions for routing the tether.

- If a **head restraint** can be moved up, typically go under it and through the posts (see image).
- Caregivers often refer to head restraints as **head rests**.
- Some vehicle owner's manuals say to remove (and safely stow) head restraints when a tether is used.
- Some head restraints cannot be moved or removed, making tether use challenging. Follow car seat instruction manuals and vehicle owner's manuals for routing the tether strap over or alongside the head restraint.



Routing single strap tether in vehicles with head restraints

Routing double strap tether in vehicles with head restraints

Tether Anchor Weight Limits

Consideration to weight limits should be made when using the tether, just like with lower anchors.

- **Vehicles:** Vehicle manufacturers may limit the use of tether anchors based on the weight of the child and/or car seat. Before using a tether, check the vehicle owner's manual for use information.
 - Some vehicle manufacturers defer to the car seat manufacturer for tether anchor use limits.
 - Unless prohibited due to weight limits by a manufacturer, NHTSA recommends use of the tether.
- **Car Seat:** Car seat manufacturers usually recommend use of the tether with forward-facing car seats, but always check the car seat instruction manual for maximum weight limit use.



LEARN • PRACTICE • EXPLAIN—LATCH WEIGHT LIMITS

With a partner, practice explaining how to determine lower anchor and tether weight limits.

Where do you find this information?

What do you do when the car seat manufacturer and the vehicle manufacturer have different weight limits?

Tether Anchors and Pickup Trucks

Limited cab space in pickup trucks means it is especially important to protect forward-facing children by using the tether.

Using tethers in pickup trucks may look very different compared to other vehicles. Because there is limited space behind the rear seats of pickup trucks, there are often challenges for tether anchor design. Always check the vehicle owner's manual to ensure correct use.

There are two general types of pickup truck tether systems.

- Direct routing
- Indirect routing

Direct Routing Tether Systems

The tether routes directly to a tether anchor somewhere behind the vehicle seat, similar to systems in other vehicles.

- The anchor might be on the wall, seat, or floor of the pickup truck.
- Often, the seat back must be folded forward (or, sometimes, the seat cushion folded upward) in order to access the tether anchor.
- **Direct routing tether systems** are more commonly found in larger pickup trucks.



Direct tether routing





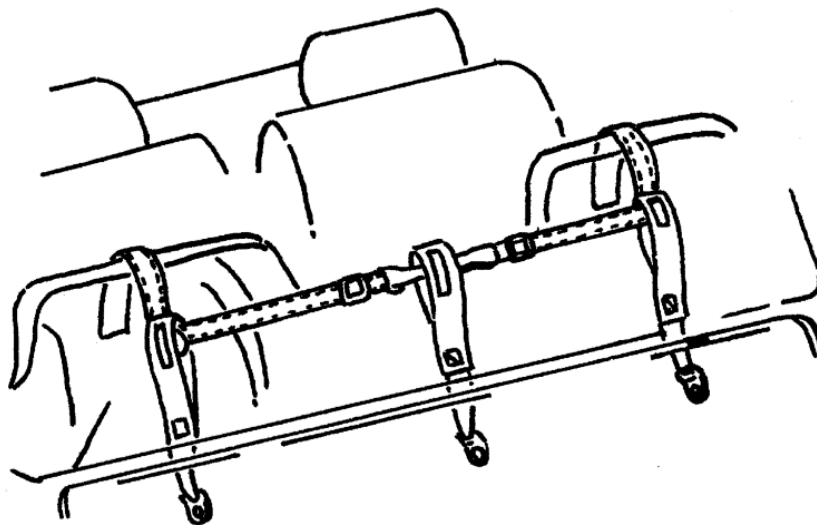
VIDEO—NISSAN FRONTIER TETHER INSTRUCTIONS

This video shows use of a tether and tether anchor.

Indirect Routing Tether Systems

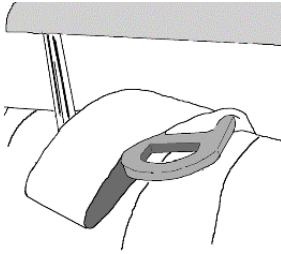
The tether first goes through a router that's directly behind the seat and then attaches to a tether anchor that is located elsewhere, often behind an adjacent vehicle seat.

- **Indirect routing tether systems** are found in both smaller and larger pickups.
- Always check the vehicle owner's manual to ensure correct use.



This drawing shows the routing of a tether system with a dual-loop design. The tethers for the two car seats on the outboard seats route through router loops behind the seats and over to the loop behind the center seat. In this system, the instructions allow both tether connectors to attach to the same anchor.

Router Design and Function



Webbing loop (with metal ring)



Wire loop



Open wire

- Router designs vary by manufacturer. They are either closed loops (made of various materials) through which the tether hardware must pass, or open systems, which allow only the webbing to slide through.
- Loop-style routers might also serve as tether anchors.
- Some loop-style routers made of webbing have metal rings inside to serve as the tether anchor.

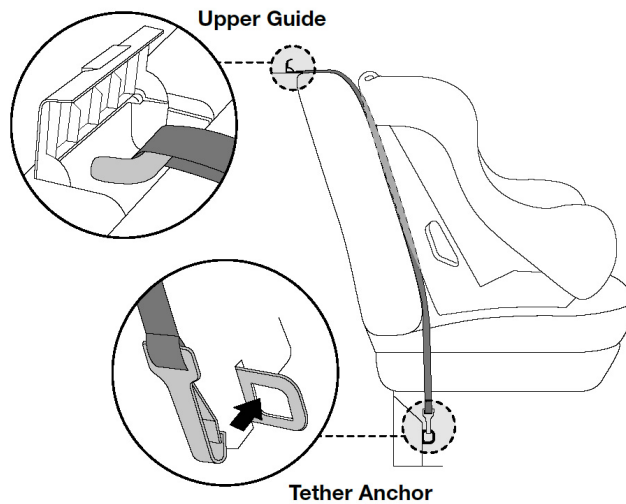
This tether goes through a router and then left, to the anchor.



Example of a router that also serves as the tether anchor

Tether System Examples

Pictured at right is an example of a unique tether system with an open wire router and tether anchors that are located in positions other than the typical rear window shelf or vehicle seat back. This specific scenario is a Honda Ridgeline. Detailed instruction can be found in the vehicle owner's manual.



1 – Open wire router



2 – Outboard tether anchor points



3 – Center tether anchor point

1. Each seating position in the second row has an open wire router behind the head restraints (outboard and center).
2. The tether anchor points for each outboard seating position are located on the vehicle door side of the seating position, near the vehicle floor where the seat belt is anchored.
3. The center tether anchor point is located between the two lower anchors in the center position. Initially, the center tether anchor point may be mistaken for a lower anchor that is not properly positioned.

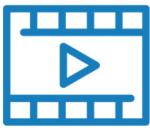
Car Seat Incompatibility

Sometimes car seats may be incompatible with the tether systems in pickup trucks.

- Common reasons are:
 - The tether is too short.
 - The tether hardware is too bulky to fit through a loop style tether router.
- Fixes may be available, such as acquiring a tether extender from the car seat manufacturer or using a different car seat.
- Check with the car seat and/or vehicle manufacturer with questions.

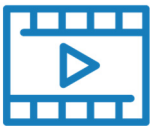


This tether system is incompatible with this car seat because the tether adjuster hardware is too large to pass through the loop



VIDEO—CHEVROLET SILVERADO TETHER INSTRUCTIONS

This video shows an installation example with truck tether loops: Chevrolet Silverado (wire loops).



VIDEO—TOYOTA TUNDRA TETHER INSTRUCTIONS

This video shows an installation example with truck tether loops: Toyota Tundra (fabric loops).

Locate LATCH in Manuals and Vehicles



ACTIVITY—LOCATE LATCH IN MANUALS

- Locate lower anchor and tether anchor information in two different vehicle owner's manuals.

Task	Vehicle #1		Vehicle #2	
1. Lower anchor locations found?	YES	NO	YES	NO
2. Lower anchor symbols found?	YES	NO	YES	NO
3. Tether anchor locations found?	YES	NO	YES	NO
4. Tether anchor symbol found?	YES	NO	YES	NO
5. Is there a maximum child weight indicated for lower anchor and/or tether use indicated?	YES	NO	YES	NO
6. If center seat is not a designated LATCH position, is borrowing allowed?	YES	NO	YES	NO
7. Page number(s)?				



ACTIVITY—LOCATE LATCH IN VEHICLES

Now locate lower anchors and tether anchors in three different vehicles. Remember, some anchors are easy to find while others are not so obvious.

1. Inspect three vehicles to see some differences in the locations of LATCH systems and the words/symbols to describe them. Keep in mind that a LATCH system has two lower anchors and one tether anchor.
2. Document the number of seat belts in rear seating positions, the number of LATCH seating positions, and the number of tether anchors in the three vehicles on the table below.

Task	Vehicle #1	Vehicle #2	Vehicle #3
1. Number of seat belts in rear seating positions			
2. Number of designated LATCH seating positions (lower anchors and tether anchor)			
3. Number of tether anchor only positions (no lower anchor)			

LATCH Do's and Don'ts

LATCH MISUSE

When using LATCH, caregivers must avoid the following common errors.

Lower Anchor Errors

- Using the lower anchors in a non-approved vehicle seating position (often borrowing lower anchors in the center seat)
- Using the lower anchors past the weight limit stated by the car seat and/or vehicle manufacturer
- Using the seat belt and lower anchor connectors at the same time (unless allowed by both manufacturers)
- Securing two lower anchor connectors to the same lower anchor
- Connecting the lower anchor connectors to the lower anchors upside down

Tethering Errors

- Not using a tether when available
- Using the tether past the weight limit stated by the car seat and/or vehicle manufacturer
- Routing the tether strap incorrectly
- Connecting the tether to vehicle hardware that is not a tether anchor
- Connecting the tether to a tether anchor for a different seating position
- Connecting the tether to the tether anchor upside down

LATCH REMINDERS

A CPS Technician's job is to educate caregivers about how to use car seats and booster seats according to the car seat instruction manual and vehicle owner's manual.

With respect to LATCH, remember the following.

- LATCH, as an alternative way to install a car seat, is often easier to use than a seat belt. However, both methods provide a safe way to install a car seat. Select the method that results in the best installation and that the caregiver is able to use properly in his or her vehicle.
- Caregivers should be encouraged to always refer to the car seat instruction manual and the vehicle owner's manual to know for certain that LATCH is being used correctly.
- Caregivers may want to install their car seat with lower anchors and the seat belt at the same time because they believe it is safer for their child. However, using the lower anchors and seat belt for the same installation is only allowed when approved by both the car seat and vehicle manufacturers.
- Forward-facing car seats installed with a seat belt should also be tethered, whenever possible. A tether should never be used alone to install a car seat.
- Weight limits must be followed when using lower anchor connectors and tethers to secure car seats.





Progress Check

1

Why is tether use so important?

2

Which is safer, LATCH or seat belt (with tether when applicable) installation?

3

A caregiver has installed a car seat in a center rear position using the tether and lower anchor connectors in a vehicle that does not have a designated LATCH system in that position.

Where should you look to find out whether the inner lower anchors of the outboard LATCH positions may be borrowed to install a car seat in this position? If borrowing is not allowed, what should you tell the caregiver?

4

The caregiver's vehicle manufacturer has stated lower anchor and tether anchor weight limits of 65 pounds (combined weight of the child plus the car seat). The car seat is rated for harness use to 65 pounds (child weight). The label on the car seat indicates a maximum weight of a 40-pound child for lower anchor use.

At what child weight must the seat belt be used instead of the lower anchors?

NOTES 

7

Introduction to Car Seats

MODULE OBJECTIVES



- **REVIEW** the Federal Motor Vehicle Safety Standard (FMVSS) 213 related to car seats and booster seats.
- **EXPLAIN** NHTSA's car seat and booster seat recommendations.
- **PROVIDE** a general overview of how to select an appropriate car seat or booster seat.
- **IDENTIFY** car seat and booster seat parts and functions.
- **CHECK** car seats and booster seats for recalls and expiration dates.

This module serves as an introduction to car seats and booster seats including their parts and functions. More detailed information will be provided in upcoming modules on rear-facing car seats, forward-facing car seats, and booster seats.

Federal Standard for Car Seats

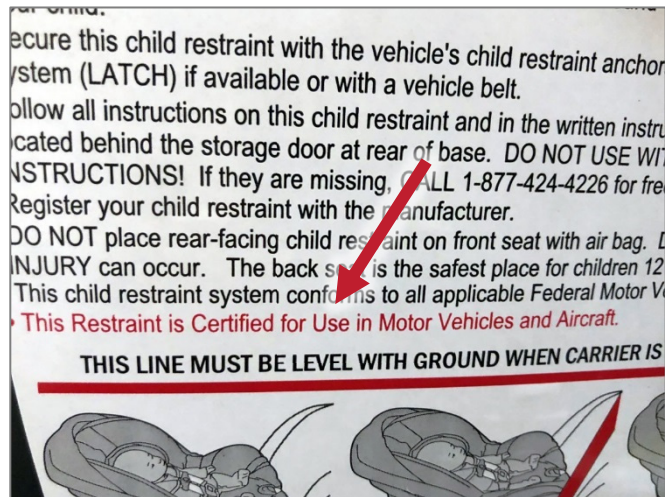
NHTSA's Federal Motor Vehicle Safety Standard (FMVSS) 213 specifies performance standards for car seats and booster seats used in motor vehicles.

- Performance standards mandate how the product should perform in a crash.
- All car seats and booster seats manufactured for use in the United States must meet FMVSS 213 requirements and are labeled as such.

- Car seat and booster seat manufacturers are required to self-certify that their car seats meet the requirements of FMVSS 213. Examples of these requirements include the following.
 - The car seat passes a 30-mph frontal sled test, which simulates a crash, secured with vehicle **lap belt** or lower anchor connectors and tether (if needed).
 - The flame-retardant fabric and webbing width meet the specified requirements.
 - The amount of force needed to open the buckle meets the specified requirement.
 - The required lower anchor connectors and tether are present on the seat.

- Permanent, visible labels must be placed on the car seat including the following information.

- Statement that the car seat is certified to FMVSS 213
 - **EXAMPLE:** Conforms to all applicable Federal motor vehicle safety standards



Car seats and booster seats will have labeling that the car seat is certified to FMVSS 213

- Child height and weight limits
- Basic instructions for correct installation, including maximum weight for use of lower anchor connectors
- Name and address of manufacturer
- Model name or number, and date of manufacture
- Air bag warning label for rear-facing car seats
- Statement that car seat conforms to standards for use in aircraft (if car seat is certified for use in aircraft)

NHTSA CAR SEAT AND BOOSTER SEAT RECOMMENDATIONS

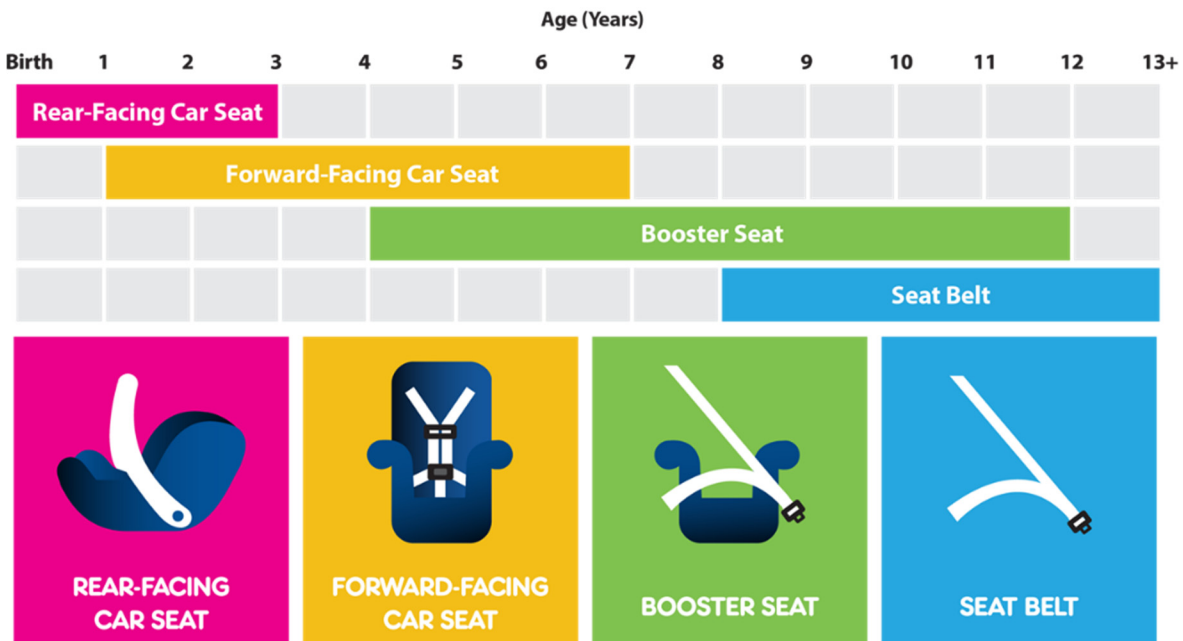
NHTSA recommendations reflect best practice and promote car seat and booster seat use for as long as possible based on the following.

- **Birth to 12 Months:** Children under the age of one should always travel in a rear-facing car seat.
- **1 to 3 Years:** Children should travel in rear-facing car seats for as long as possible until reaching the weight or height limit allowed by the car seat manufacturer.
- **4 to 7 Years:** Children should travel in a forward-facing car seat with a harness until reaching the maximum weight or height limit allowed by the car seat manufacturer.
- **8 to 12 Years:** Children should travel in a booster seat until they properly fit a seat belt.

TECH TIP

When discussing NHTSA's car seat and booster seat recommendations with caregivers, it is important to know and follow local state law.

NHTSA Recommendations can be found at nhtsa.gov/carseat.





LEARN • PRACTICE • EXPLAIN—NHTSA RECOMMENDATIONS

With a partner, practice explaining best practice recommendations to transport children, taking into consideration both NHTSA's recommendations and state law.

Selecting a Car Seat or Booster Seat

Car seats and booster seats should be selected based on the child's:

- Age
- Weight
- Height
- Developmental level

Additional consideration should be given to the following.

- The fit of the car seat or booster seat in the vehicle
- The ability of the caregiver to use the car seat or booster seat correctly every time

NHTSA's 5-Star **Ease-of-Use Rating System** allows caregivers to compare certain car seat features to make informed decisions when selecting a car seat or booster seat.

- Search [nhtsa.gov](https://www.nhtsa.gov) for the latest ratings.

TECH TIP

Many car seats offer higher height and weight limits that may help older or larger children who need additional physical or developmental support not provided by a booster seat or seat belt.

What is the best seat?

CPSTs are often asked, "What is the best car seat for my child?" Technicians may provide information to help caregivers select a seat, making certain that recommendations are based on the specific needs of the family and features of the seats that support those needs.

The best car seat is the one that fits the child, fits the vehicle, and that the caregiver can use correctly every time. Other considerations include the caregiver's budget or lifestyle.

TECH TIP

Technicians must not make recommendations based solely on brand and/or personal preference.

Car Seats and Booster Seats

In upcoming modules, each type of car seat listed below will be discussed in detail.

- Rear-facing only
- **Convertible**
- **Forward-facing only**
- **Combination**
- **All-in-one**
- Booster seat

TECH TIP

Convertible car seats can be used both rear-facing and forward-facing.

Combination car seats are forward-facing only car seats that can be used with the harness forward-facing and then as a booster seat.

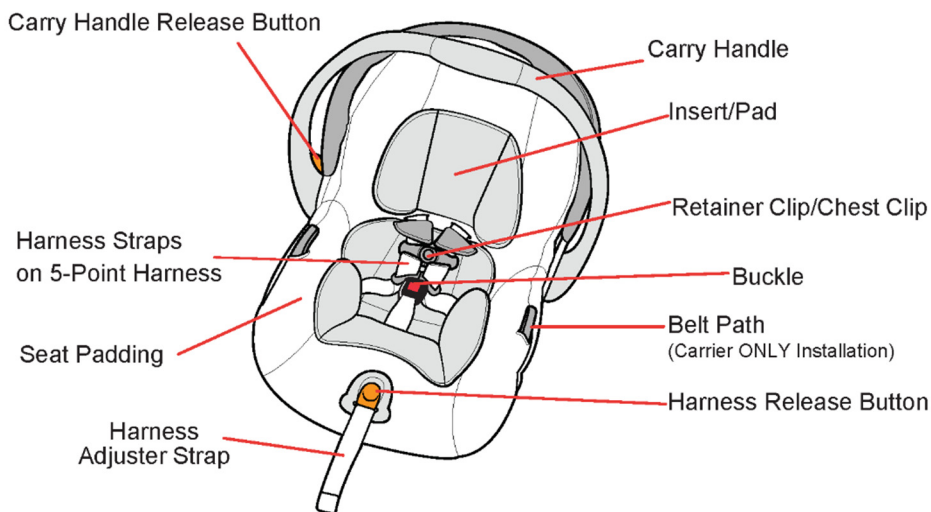
All-in-one car seats can be used rear-facing, forward-facing, and as a booster. Car seat manufacturers may refer to them as **3-in-1** or **4-in-1** car seats.

PARTS AND FUNCTIONS

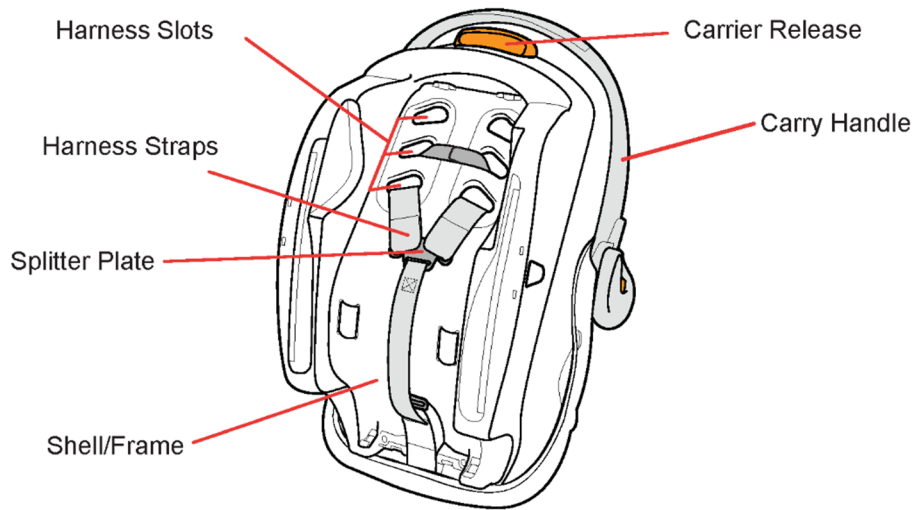
In order to correctly use car seats and booster seats, it is important to be familiar with the parts of the seats and their respective functions.

Keep in mind that parts on car seats and booster seats may look different but serve the same function. Their design may vary by manufacturer and by model. This is because FMVSS 213 sets performance standards and not design standards. Always check the car seat instruction manual for additional information.

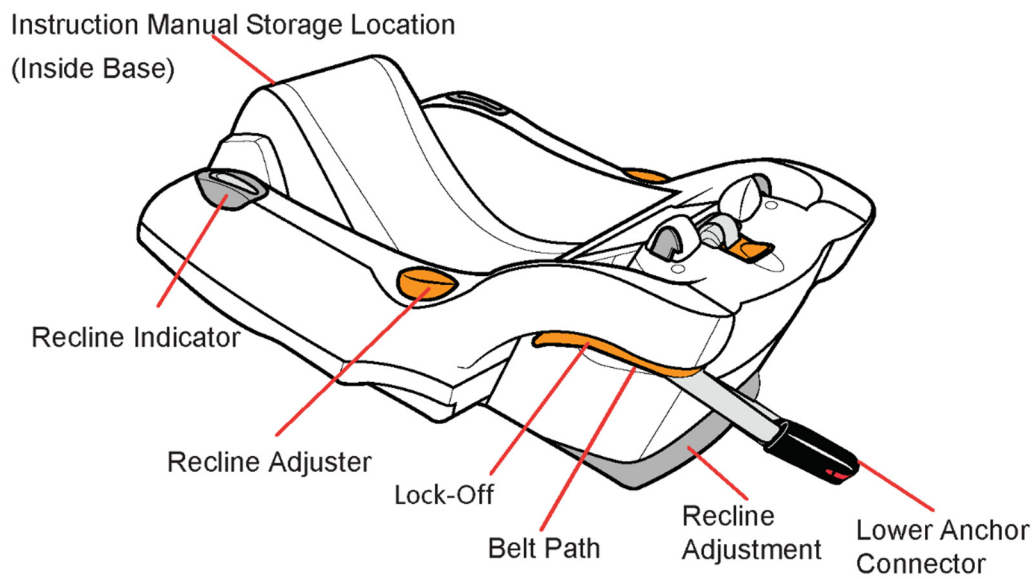
Carrier



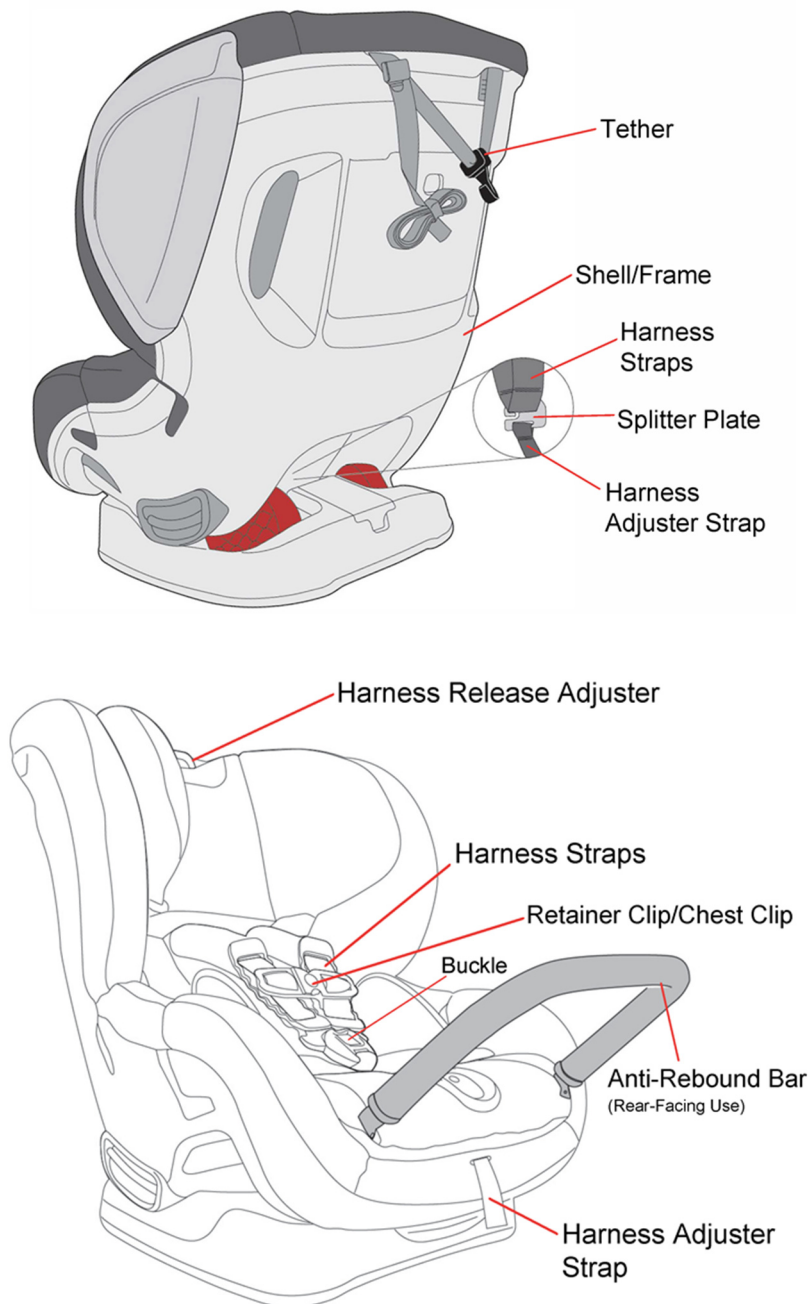
Carrier, continued



Detachable Base



Convertible Car Seat



The parts reference that follows outlines the function of many of the common parts found on car seats and booster seats. Always check the car seat instruction manual for additional information.

Parts Reference

Anti-Rebound Bar: Rigid bar found on some rear-facing car seats used to reduce movement of the car seat towards the rear of the vehicle in the event of a crash

Belt Path: Manufacturer-defined area on a car seat or booster seat where the seat belt or lower anchor connector webbing is routed to secure in the vehicle

Buckle: Locking mechanism on the car seat where the harness straps connect

Carrier: Part of a rear-facing only car seat that connects to a detachable base; depending on the model, may be used without the detachable base

Carrier Release: Mechanism that releases the carrier from the detachable base on a rear-facing only car seat; may be found on the carrier or the detachable base

Carry Handle: Plastic bar attached to rear-facing only car seats used to carry the car seat; depending on the model, also may be used as an anti-rebound bar

Carry Handle Release Button: Mechanism that releases the carry handle on a rear-facing only car seat so it can be adjusted to different positions for carry and travel depending on the model

Detachable Base: Separate car seat base that can be installed in the vehicle; typically found on rear-facing only car seats

Foot Prop/Load Leg: Support mechanism that extends from the base of a car seat to the vehicle floor; used to prevent or reduce excessive forward and downward rotation of the seat in a crash

Harness, 5-Point: Webbing straps that keep a child in the car seat and spread crash forces with five points of contact (one over each shoulder, one on each side of the pelvis, and one between the legs) with all five coming together at the buckle

Harness Adjuster Strap: Single piece of webbing used to tighten the harness on a car seat

Harness Release Button: Mechanism that releases the harness to allow the straps to be loosened on a car seat

Harness Slot: Place in the car seat where the harness is threaded through the shell

Insert/Pad: Additional accessory for car seats and booster seats provided by the manufacturer to aid positioning, fit and comfort

Instruction Manual Storage Location: Defined space, required by FMVSS 213, on car seats and booster seats to store the instruction manual

Labels: General use information, as required by FMVSS 213, affixed to the car seat or booster seat

Lock-Off: Built-in seat belt locking feature found on the shell of the car seat or detachable base

Locking Clip: Metal piece that secures the seat belt at a fixed length in place of a locking latch plate that does not lock; used with car seat installation

Lower Anchor Connector: Metal component used to secure the car seat or booster seat to lower anchors in the vehicle

Recline Adjuster: Mechanism that moves the recline adjustment

Recline Adjustment: Part of the car seat that moves to change the recline angle; can be found on both rear-facing and forward-facing car seats

Recline Indicator: Mechanism that identifies correct angle for use per manufacturer's instructions

Retainer Clip/Chest Clip: Plastic part that holds harness shoulder straps on car seats together over the child's chest; positioned at child's armpit level

Shoulder Belt Guide/Positioner: Mechanism on a booster seat where the vehicle shoulder belt is routed to help position the belt on the shoulder rather than across the neck; may be adjustable

Seat Padding: Fabric that covers the shell/frame and foam, if present, of car seats and booster seats

Shell/Frame: Molded plastic and/or metal structure of the car seat or booster seat

Splitter Plate: Metal component that connects the two ends of the shoulder harness to the harness adjuster strap on a car seat

Tether: Piece of adjustable webbing (single or dual strap) with a tether connector on one end attached to the top of a car seat; attaches to a tether anchor in the vehicle to limit forward motion in a crash

REGISTERING A CAR SEAT OR BOOSTER SEAT

Per FMVSS 213, all car seat manufacturers must provide a **registration card** on the car seat or booster seat. Caregivers are encouraged to register each car seat to be notified about safety issues, including recalls.

Alternate methods to registering a car seat include the following.

- Contact the car seat manufacturer (online or by phone)
- NHTSA's Car Seat Registration Form at [nhtsa.gov](https://www.nhtsa.gov)

Form Approved: O.M.B. No. 2127-0576

**CHILD SAFETY SEAT REGISTRATION FORM
FOR YOUR CHILD'S CONTINUED SAFETY**

Although child safety seats undergo testing and evaluation by the manufacturer and must also meet the requirements of Federal Motor Vehicle Safety Standard No. 213; Child restraint systems, it is possible that your child seat could be recalled.

All child seats come with a registration form so that owners can provide their names and addresses to the manufacturer. In the event of a recall manufacturers are required to notify all registered owners by first class mail that their child seat is included in the recall. Therefore, it is very important that the manufacturer of your child seat has your current mailing address, and all of the information necessary to properly identify your child seat.

The National Highway Traffic Safety Administration (NHTSA) encourages owners of child safety seats to **fill out the manufacturer's registration form attached to the child safety seat and send it directly to the manufacturer.** However, if you would like NHTSA to forward your registration information to the manufacturer, please provide all of the information requested on the lower half of this form, sign it and mail or fax (202-366-1767) it to: U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Defects Investigation, Correspondence Research Division (NEF-109), 1200 New Jersey Avenue, SE, Washington, DC 20590.

If you have any questions, or need help with any child seat, please call the U.S. Department of Transportation's toll-free Vehicle Safety Hotline at 1-888-327-4236 or visit our Website at www.nhtsa.gov.

E-mail: _____

Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Child Seat Manufacturer: _____

Model Number: _____ Manufacture Date: _____

I AUTHORIZE NHTSA TO PROVIDE A COPY OF THIS FORM TO THE CHILD SEAT MANUFACTURER IDENTIFIED ABOVE

(SIGNATURE REQUIRED): _____

NHTSA Car Seat Registration Form

RECALLS

Recalls of car seats and booster seats may be initiated in several ways.

- Car seat manufacturers may identify a need for a recall found through testing and report the finding to NHTSA.
- Consumers may report a possible problem to NHTSA. Information will be reviewed to determine the need for an investigation to initiate a recall.
- NHTSA tests car seats and booster seats for compliance with FMVSS 213 and identifies an issue during testing.

Car seat manufacturers must label car seats and booster seats with information including the model name or number and date of manufacture for the seat. CPS Technicians and caregivers should use the labels to determine if the car seat or booster seat has a recall. A car seat or booster seat missing the label may be dangerous to use, as recalls cannot be determined.

Contact the car seat or booster seat manufacturer if you have any questions about the model name, number, or date of manufacturer.

NHTSA's recall list can be found at: [nhtsa.gov/recalls](https://www.nhtsa.gov/recalls). You can sign up for recall alerts.

TECH TIP

Take care in communicating recalls to a caregiver so as not to instill panic. Recalls do not always require the caregiver to discontinue using the car seat or booster seat. Always follow the car seat instruction manual concerning the recall. Make sure to provide corrective action steps, if provided.



LEARN • PRACTICE • EXPLAIN—RECALLS

Using the car seat provided, locate the model name or number and date of manufacture. Using this information, check the recall list. With a partner, practice explaining recalls.

EXPIRATION DATES

Car seat manufacturers use **expiration dates** as part of an industry practice. Reasons for expiration dates may include the following.

- Possible deterioration or breakdown of the plastic shell and other parts
- Updated performance standards or labeling requirements

Expiration dates vary between manufacturers and, possibly, between specific models of car seats made by the same manufacturer. Expiration dates can be found in a number of places on car seats and booster seats.

- Stamped in the shell
- On the label
- Car seat instruction manual

Contact the car seat or booster seat manufacturer if you have any questions about the expiration date.



LEARN • PRACTICE • EXPLAIN—EXPIRATION DATE

Using the car seat provided, locate the expiration date. Practice explaining expiration dates to a partner.

SECONDHAND CAR SEATS AND BOOSTER SEATS

Following are questions for the caregiver to consider before using a secondhand or borrowed car seat or booster seat.

- Is the history of the car seat known?
- Does the car seat appear to be good working order?
- Are the labels present?
- Is the car seat expired?
- If recalled, has the recall been corrected?

TECH TIP

CPS Technicians cannot certify or verify that a car seat is safe to use. The caregiver always makes the final decision.

The caregiver always makes the final decision on whether or not to use a secondhand car seat. The role of the CPS Technician is to provide the caregiver with the information needed to make an informed decision. CPSTs cannot certify a car seat as safe.

MODIFYING A CAR SEAT OR BOOSTER SEAT

Car seats and booster seats should never be modified. Minor modifications can change the way a car seat performs in a crash.

NON-APPROVED PRODUCTS

Caregivers should follow the car seat instruction manual when considering use of **non-approved products** such as inserts, canopy covers, toys, and vehicle seat protectors.

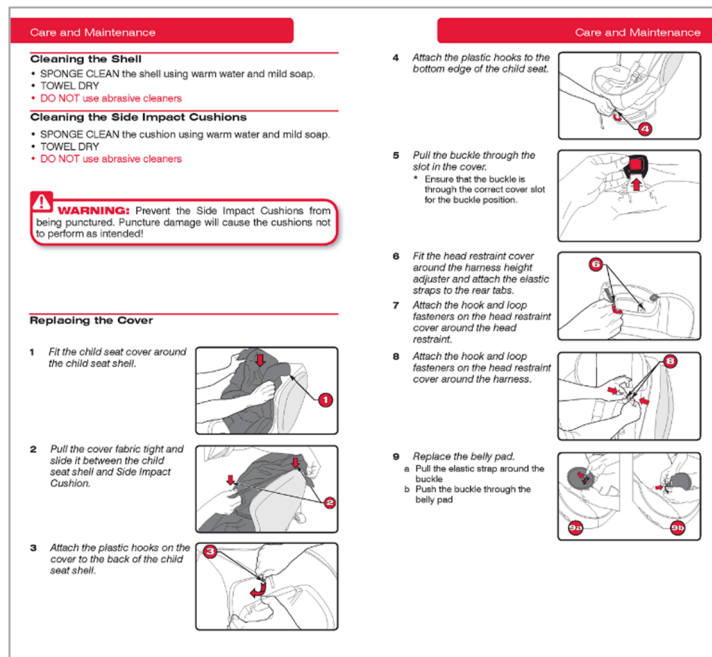


Non-approved harness strap covers

Only products approved by the car seat manufacturer for use with a particular car seat or booster seat model are acceptable to use. Check both the car seat instruction manual and the manufacturer's website for information on use of these products.

Cleaning Car Seats and Booster Seats

Caregivers should follow the car seat instruction manual for cleaning the car seat or booster seat. Cleaning information typically is found in the car seat instruction manual.



Sample cleaning guidelines page from a Britax car seat instruction manual

Car Seats and Booster Seats that Have Been in a Crash

Following a motor vehicle crash, car seats and booster seats in the vehicle may need to be replaced. Replacement is dependent on the severity of the crash as well as the car seat manufacturer's guidelines for the seats.

- Car seats and booster seats always need to be replaced after a moderate or severe crash.
- After a minor crash, replacement recommendations vary by car seat manufacturer.
 - NHTSA has established the following criteria for assessing minor crash severity.
 - No visible cracks or deformities can be seen by inspecting the car seat or booster seat.
 - The vehicle involved in the crash can be driven from the scene.
 - The vehicle door nearest the car seat is undamaged.
 - There were no occupant injuries.
 - Air bags did not deploy.
 - Check the car seat instruction manual for specific guidelines. It is not always necessary to replace a car seat or booster seat.
- The caregiver should contact the car seat or booster seat manufacturer directly with any questions.

TECH TIP

CPS Technicians should remind the caregiver to discuss options for car seat replacement with their vehicle insurance carrier after a crash.

Car Seat Selection Errors

Caregivers often make the following car seat and booster seat selection errors.

- Car seat or booster seat does not meet the child's age, weight, height, or developmental level.
- Car seat or booster seat is expired.
- Secondhand car seat or booster seat is missing parts, has an unknown history, or does not appear to be in good working order.
- Car seat or booster seat has been involved in a crash and is being used against manufacturer's guidelines.
- Car seat or booster seat has a recall that has not been addressed.

Children with Special Transportation Needs

Whenever possible, it is best practice for all children to use a conventional car seat if it meets the child's needs. Conventional car seats are readily available, usually from a retailer, and are less expensive.

Whenever possible, appropriate car seat selection should be made in collaboration with the child's healthcare team. Some children may have health or behavioral needs that may not be met with a conventional car seat or booster seat and may need to use a specialized seat.

TECH TIP

Conventional seats are car seats and booster seats that are commercially available to the caregiver.

Specialized seats are car seats and booster seats obtained through a specialized provider.



Examples of conventional car seats

Additional Training

- An enrichment training, **Safe Travel for All Children: Transporting Children with Special Health Care Needs**, is available for CPS Technicians who will be working with children who have special transportation needs.
- More information on this training can be found at preventinjury.pediatrics.iu.edu.

Child's Behavior Considerations

Caregivers will often request advice regarding travel with a child with behavioral issues.

- These behaviors may distract the driver and put other passengers in danger.
- The behavior may be caused by a child's medical condition or a developmental stage.
- Caregivers should be referred to the child's physician or a behavioral specialist and/or to a CPS Technician who has completed the **Safe Travel for All Children: Transporting Children with Special Health Care Needs**. They can discuss the transportation challenges and possible options.
- Some children with behavioral issues may benefit from using a different car seat or booster seat.

TECH TIP

Be empathetic to the caregiver.

Remember that the family may be dealing with many complex issues all at one time, regardless of whether the child has behavioral issues.



Progress Check

1

What factors should be considered when selecting a car seat or booster seat for a child?

2

How should you answer if asked, "What is the best car seat for my child?"

3

What do you do if you cannot find the model name or number on the car seat?

4

Name three car seat and booster seat selection errors caregivers often make.

8

Rear-Facing Car Seats

MODULE OBJECTIVES



- **DESCRIBE** why children should travel rear-facing as long as possible.
- **IDENTIFY** types of rear-facing car seats.
- **EXPLAIN** steps for rear-facing car seat use and installation.
- **EXPLAIN** best practices and caregiver choice about rear-facing car seats.
- **IDENTIFY** rear-facing car seat misuse.

The rear-facing mode is used for children from birth until they reach the upper weight or height limits of the car seat as labeled for use rear-facing.

Why Children Should Travel Rear-Facing

Children's bodies change as they grow. Different types of car seats and booster seats are made to support the child's growth.

- Rear-facing car seats are designed to support the head and neck of an infant and a young child in a frontal crash.
- The head, neck, and spinal cord of an infant are the most vulnerable parts of their bodies.
- A young child's head is larger and heavier in proportion to the body than that of an older child. Their neck muscles are also weaker.

- When a child is properly restrained rear-facing, the head and neck move together with the car seat, allowing the crash force to be spread across the shell of the car seat. This protects the child's head, neck, and torso, reducing the risk for a neck and spine injury.

- When restrained forward-facing in a frontal crash, the forces on the neck of an infant or young child could lead to severe injury or death.

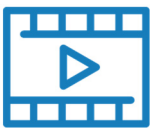


Keep children rear-facing as long as possible

- Caregivers often express concern when their child's feet or legs reach the back of the vehicle seat. Due to a young child's flexibility, children can find a comfortable position with their legs crossed or on the back of the vehicle seat.
 - After reviewing extensive crash and injury data, the AAP determined that children are not at an increased risk for leg injuries rear-facing rather than forward-facing.¹
 - Additionally, leg injuries can be treated effectively and heal more easily than injuries to the brain, neck, and spinal cord which often have life-long health consequences.²

TECH TIP

For guidance on communicating with caregivers about keeping children rear-facing longer, review **Rear-Facing Quotables: Guiding Parents to Keep Children Rear-Facing Longer** (cpsboard.org).



VIDEO—WHY CHILDREN SHOULD TRAVEL REAR-FACING

This video explains why a child should remain in a rear-facing car seat for as long as possible.



LEARN • PRACTICE • EXPLAIN—COMMUNICATION SKILLS

With a partner, practice explaining best practice recommendations for transporting children rear-facing in the following scenarios.

1. The child is 18 months old and 30 lbs., the same weight as the three-year-old sibling. The caregiver is wondering how to transport both children.
2. The child is 13 months old and 26 lbs. The caregiver would like to see the child while driving and was told by the pediatrician that the child can ride forward-facing.
3. The caregiver says, “The state law says my son can turn forward at age two. Now that he is two, I want to turn him around.”
(Child is within height and weight limits to remain rear-facing.)

When working with caregivers, it is critical that they understand the reasons why children are safer when traveling rear-facing in vehicles.

Types of Rear-Facing Car Seats

There are three types of rear-facing car seats.

- Rear-facing only
- Rear-facing convertible
- Rear-facing all-in-one



Rear-facing convertible car seat



Rear-facing only car seat

REAR-FACING ONLY CAR SEATS

Many caregivers choose to use a rear-facing only car seat as the first car seat for their infant. Always check the car seat instruction manual for specific use guidelines.

- Typically, rear-facing only car seats have two parts—the carrier and a detachable base.
 - Some models require use with the detachable base.
 - Most of the time the carrier can be installed without the detachable base.
- Always check the labels on the car seat for the weight and height limits.
 - Most rear-facing only car seats have a starting weight limit of four pounds.
 - Many rear-facing only car seats can accommodate children to 30+ pounds.
- In general, the top of the child's head should be well contained within the shell and at least one inch from top of shell.

TECH TIP

General use guidelines including weight and height limits can be found on the labels on the car seat. Refer to the car seat instruction manual for more specific use information.

- Harness straps should be snug and be at or below the shoulders.
- Caregivers should never use a car seat outside the weight or height limits defined by the car seat manufacturer.
 - Once a child outgrows the rear-facing only car seat, the child could move to a convertible or all-in-one car seat to allow a child to stay rear-facing to higher weight and height limits.

TECH TIP

All car seats that can be used rear-facing must have an air bag warning label adjacent to the head area which can be helpful in identifying rear-facing car seats.

REAR-FACING CONVERTIBLE AND ALL-IN-ONE CAR SEATS

Convertible and all-in-one car seats have different modes of use, and a 5-point harness and two belt paths (rear-facing and forward-facing). A rear-facing convertible car seat or rear-facing all-in-one car seat are also appropriate choices for an infant as long as the infant meets the minimum weight and height limits for the car seat. Check the car seat instruction manual for information specific to using the car seat rear-facing.

- Always check the labels on the car seat for the weight and height limits.
 - Many convertible and all-in-one car seats are labeled for rear-facing use for children up to 40+ pounds.
- Children with poor head and/or torso control and with special transportation needs may benefit from staying rear-facing as long as possible.
 - The greater recline in some rear-facing car seats can be a great advantage to children with decreased head and torso control.
- Caregivers should never use a car seat outside the weight or height limits defined by the car seat manufacturer.
 - In general, the top of the child's head should be well contained within the shell and at least one inch from top of shell.
 - Once a child outgrows the rear-facing car seat, they could move to a forward-facing car seat with a harness.

TECH TIP

Suggest ways to ease the caregiver's need to see the child during driving. For example, children sleep through the night without being under the caregiver's watchful eye.



LEARN • PRACTICE • EXPLAIN—CAR SEAT WEIGHT AND HEIGHT LIMITS

With a partner, practice demonstrating where to find the weight and height limits on the car seat labels.

Steps for Rear-Facing Car Seat Use

The steps that follow can be applied to all three types of rear-facing car seats.

STEP 1: SELECTION

Choose the right car seat.

- The car seat should be appropriate for the child's weight, height, and developmental level.
- The car seat should fit in the caregiver's vehicle.
- The caregiver is able to use the car seat correctly every time.

STEP 2: DIRECTION

Face the car seat the right way.

A child should remain in a rear-facing car seat until reaching the maximum weight or height limit allowed by the car seat manufacturer.

- An infant under the age of one must always ride in a rear-facing car seat.
- Some states have laws defining how long a child must remain rear-facing.

TECH TIP

CPS Technicians are in a great position to talk to caregivers about safe sleep practices for children, and remind them that car seats are only for travel.

Some caregivers may think it is safe to leave the child in the car seat (when inside the home) with a loose harness and/or unsecured buckle.

Infants can strangle on loose harness straps, fall out of the car seat, or become otherwise injured.

Best practice would be to remove sleeping children from car seats in the home and at childcare, and place on a safe sleep surface free from items like pillows, blankets, and stuffed animals.

STEP 3: LOCATION

Choose an appropriate location in the vehicle.

Not all seating positions in the vehicle are acceptable for car seat use. Consider the seating needs of other passengers in the vehicle.

- To secure a car seat, the vehicle seat must face the front of the vehicle. Never use side-facing jump seats or vehicle seats that face the rear of the vehicle.
- Consideration should be given to air bag locations.
 - Never place a rear-facing car seat in the front vehicle seat if there is an active frontal air bag.
- Check both the vehicle owner's manual and car seat instruction manual to determine if the car seat can be used with an inflatable seat belt.
- Cargo areas are **not** designed for passenger seating under any circumstances.
- There is a perception that, as long as the car seat fits and can be installed correctly, the rear center seating position is safer because it is furthest from the point of impact in any direction. However, some rear center seating positions are not usable or compatible, per the car seat and/or vehicle manufacturers.
- Check both the vehicle owner's manual and the car seat instruction manual to see if borrowing of lower anchors is allowed in center seating positions. If use of lower anchors is not allowed, install the car seat with the vehicle seat belt.

TECH TIP

Car seats are not meant to be used on top of shopping carts and can present a serious fall hazard.

TECH TIP

Always ask:
"Who rides in this vehicle?"
"Where will each person sit?"

STEP 4: HARNESS ADJUSTMENT AND FIT

Adjust the harness to fit the child properly.

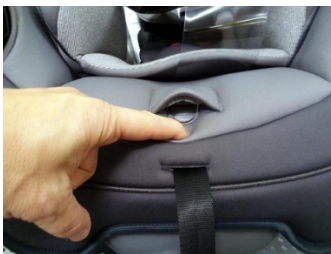
Proper harness height in a rear-facing car seat must always be at or below a child's shoulders. The harness needs to be snug and hold the child down in the car seat so they do not slide up in a crash and suffer ejection from the car seat. It is important to adjust the harness height according to the car seat instruction manual prior to installing the car seat in the vehicle.

The general method to obtain a proper harness fit includes:

1. Place the child with their back and bottom against the car seat back.
2. Adjust the harness straps at or below the child's shoulders, according to the car seat instruction manual.
3. If there are multiple **buckle strap** positions, adjust per the car seat instruction manual. The buckle strap should be close to the child's body but the child should not be sitting on the strap.
 - Some car seat manufacturers have fixes to shorten the buckle strap. Check the car seat instruction manual.
 - Some car seat manufacturers have recommended buckle strap positions depending on mode of use or child size.

TECH TIP

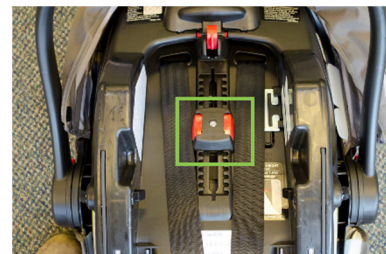
Always check that the harness is properly routed through the padding and the shell in the matching harness slots. Both areas must be checked.



Central front adjuster



Harness adjuster and buckle



Harness adjuster on back of seat



LEARN • PRACTICE • EXPLAIN—ADJUST HARNESS HEIGHT AND BUCKLE STRAP

Using a car seat, practice explaining how to change the harness height and how to adjust the buckle strap for use rear-facing.

Padding and Inserts

Often caregivers want to add padding or inserts to the car seat to help position their baby's head or to make the car seat cozier for their newborn. Only items approved by the car seat manufacturer for a particular car seat model are acceptable to use.

- Unless approved by the car seat manufacturer, padding or inserts should not be placed under the child or between the child and the harness.
- If using approved inserts, make certain to follow car seat manufacturer's guidelines on when to discontinue use.
- Some car seat manufacturers permit the use of a rolled towel at the buckle or for side support. Always check the car seat instruction manual to confirm if this is allowed.
- Non-approved padding or inserts placed under the child or under or around harnesses (for example: harness comfort covers) can compress in a crash and create slack in the harness.

Blankets

Blankets should be placed over the child after the harness is snug and secure. Any products sold for warmth for use in car seats should fit over the shell of the car seat, never between the child and harness.

TECH TIP

One way to help caregivers remember not to add padding between the baby and the car seat and/or the harness is to remind them to strap, then wrap.



Example of non-approved padding

Rear-Facing Harnessing Errors

Caregivers often make the following rear-facing harnessing errors.

- Harness is not used.
- Harness is not placed on the child correctly.
- Harness straps are too loose.
- Harness is routed incorrectly.
- Harness is twisted.
- Harness is frayed or damaged.
- Harness straps are not at or below shoulders.
- Retainer clip is not at armpit level.
- Buckle strap is not routed through the slot closest to the child.
- Buckle strap is not used correctly according to car seat instruction manual.



Example of rear-facing harnessing error



LEARN • PRACTICE • EXPLAIN—HARNESS PRACTICE

Using a car seat and doll, harness the doll per the car seat instruction manual. Practice adjusting and explaining to a partner how to properly harness the doll in the car seat.

STEP 5: INSTALLATION

Secure the car seat to the vehicle seat.

Correctly installed, a rear-facing car seat should move no more than one inch (1") side-to-side or front-to-back when tested at the belt path. Rear-facing car seats can be installed with a seat belt or with lower anchors as long as the child does not exceed the lower anchor use weight limit. While the systems are different, they are equally safe.

The general method to obtain a proper installation includes:

1. Place the car seat on the selected vehicle seat in the rear-facing direction, ensuring that the recline adjustment is in the correct position per the car seat instruction manual.
2. Place the seat belt or lower anchor connector webbing, if appropriate, through the belt path as directed by the car seat manufacturer.
3. Buckle and lock the seat belt or secure the lower anchor connectors.
4. As needed, place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the seat belt or lower anchor connectors.
5. When using a seat belt, lock the belt at a fixed length using either a retractor, latch plate or lockoff/locking clip.
6. Ensure the car seat does not move more than one inch (1") side-to-side or front-to-back when testing at the belt path using moderate force.

TECH TIP

Some car seats, when installed with a lap-and-shoulder belt, may tilt to one side when tightly installed. Tilting may be due to over-tightening or pulling up on the shoulder belt.

This can be reduced by pulling up the belt on the buckle side when tightening, instead of the retractor side of the car seat.

Another option is for the caregiver to try another seating position, or use the lower anchors if appropriate.

7. Be sure to follow the car seat instruction manual when using a tether, load leg, anti-rebound bar, or other car seat features.

8. Place the child in the car seat and make final adjustments.

- Make sure the child's back and bottom are flat against the car seat back.
- Put the harness straps over the shoulders and buckle the harness.
 - The harness straps should be flat, not twisted.
- Tighten the harness straps snugly. Be sure to pull extra webbing from the hip areas through to the shoulders or wherever the harness tightens. You should not be able to vertically pinch excess webbing at the shoulder once the harness is tightened. This is called the pinch test.
 - A snug strap should not allow any slack. It lies in a relatively straight line without sagging. It does not press on the child's flesh, or push the child's body into an unnatural position.
- Secure and place the retainer clip (also known as the chest clip) at armpit level.

TECH TIP

Rear-facing seats may have unique seat belt routing paths often referred to as European routing. Check the car seat instruction manual for specific information.



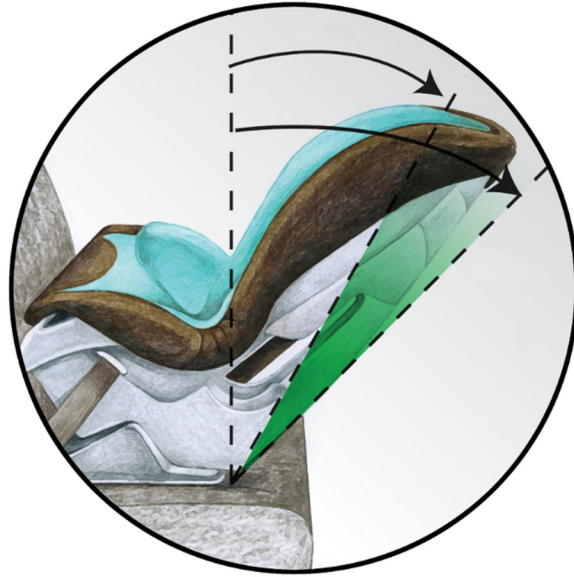
Pinch test example: harness is too loose and retainer clip is too low

Recline Angle

Caregivers must recline the rear-facing car seat according to the car seat instruction manual.

- Explain to the caregiver that this recline position can be critical, as an infant's airway could be cut off if their head is forward too long without support.
- If permitted by the car seat manufacturer, as the child ages and gains better head control, they may sit more upright. Always check the car seat instruction manual.

- A vehicle seat's angle (slope) may not allow proper recline of the car seat causing the child to ride too upright.
- Undersized (or small) rear bench seats may not allow enough space between front and rear seating areas to achieve the correct recline angle for a rear-facing car seat.
- Check the car seat instruction manual and vehicle owner's manual to determine if the car seat can contact the vehicle seat back in front of the car seat.



Recline angle diagram

Recline Indicator

The recline indicator is part of the car seat that indicates when the car seat is at the correct recline angle and must be used as indicated by the car seat manufacturer.

Appropriate recline and ranges vary by car seat manufacturer and model. Follow the instructions, labels and recline indicator(s).



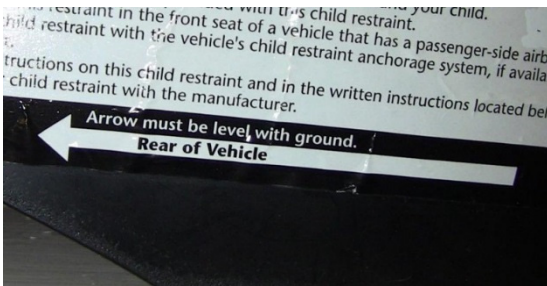
Recline indicator bubble level



Recline indicator wheel



Recline indicator ball



Recline indicator arrow



Recline indicator molded into shell



LEARN • PRACTICE • EXPLAIN—LOCATE THE RECLINE INDICATOR

With a partner, find the recline indicator on at least one car seat in your classroom. Practice explaining how to find the recline indicator and why it is important to use correctly.

Recline Adjustment

Many rear-facing car seats have a recline adjustment that is used to correct the recline angle when the slope of the vehicle seat may not allow proper recline of the car seat. Check the car seat instruction manual for use guidelines.

For car seats that do not have a recline adjustment, a firm, lightweight object such as a tightly rolled towel or pool noodle may be placed at the vehicle seat bight if allowed by the car seat manufacturer. Always check the instruction manual for the specific car seat model.

- Typically, the car seat manufacturer allows the use of either the recline adjustment or a firm lightweight object but not both.
- The vehicle must be on a level surface when checking the car seat recline.

Space Requirements

Check the following to see if the car seat fits in the vehicle.

- Do the contours of the vehicle seat permit the car seat to stay level?
- Is there enough space to allow for the correct recline of the car seat?
- Does the car seat shell or carry handle touch the vehicle seatback in front of it? Is this permitted by both the car seat and vehicle manufacturers?
- Does the car seat base (footprint) fit on the vehicle seat?
 - Many car seat manufacturers say that no more than 20% of the car seat can hang over the front edge of the vehicle seat.

TECH TIP

Unless the car seat instruction manual states differently, use the 80/20 guideline meaning that no more than 20% of the car seat can hang over the front edge of the vehicle seat.

- Some car seat manufacturers require that 100% of the footprint fit on the vehicle seat.
- Some car seat manufacturers specify how many inches are allowed to overhang.
- Some car seats have stickers or lines showing how much of the car seat is allowed to overhang. Use the 80/20 as a guideline unless the car seat instruction manual says differently.
- Small rear bench seats, like those found in some pickup trucks and SUVs, may not be deep enough to meet this requirement.

Educate caregivers that not every car seat will fit into every vehicle.

Encourage them to ask the retail store to allow trying out a car seat in their vehicle in the store parking lot.



Carry Handles on Rear-Facing Only Car Seats

Carry handles on rear-facing only car seats must be in an approved position in the car. Always check the car seat instruction manual for the specific car seat model.

- If the carry handle touches the vehicle seatback in front of it, check to make certain that this is permitted by both the car seat and vehicle manufacturers.

4.1 Adjusting Handle

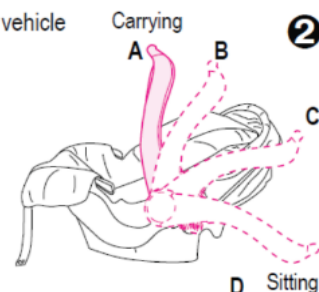
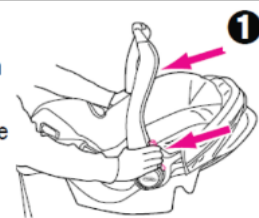
1. Press handle adjustment buttons on both sides of handle ❶.
2. Rotate handle until it clicks into any of the 4 positions:

Position A: **MUST** be used when carrying by handle,

Position A,B,C,D: may be used in vehicle

BOTH handle adjustment buttons must pop out to lock handle in place ❷.

3. Push and pull on the handle to be sure it is locked firmly in position.



Carry handle position example from Graco Snuggly car seat instruction manual

Rear-Facing Installation Errors

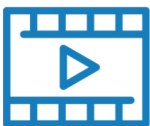
Caregivers often make the following rear-facing installation errors.

- Seat belt or lower anchor connector webbing is routed incorrectly.
- Installation is too loose.
- Seat belt is not locked.
- Car seat is not installed at the correct recline angle, per the recline indicator.
- Car seat touches the vehicle seat in front of it when not permitted by the car seat and/or vehicle manufacturers.
- Car seat is installed using two seat belts or using a seat belt and lower anchors together when it is not permitted by the car seat manufacturer.
- Lower anchor connectors are not attached to the appropriate lower anchors.
- Lower anchors are connected upside down.
- Car seat is installed borrowing lower anchors in a center seating position when not permitted by the car seat and/or vehicle manufacturers.
- Lower anchors are being used beyond the permitted weight limits.
- Lower anchor connectors, when not in use, are stored incorrectly.
- Car seat is tethered rear-facing and this is not permitted by the car seat and/or vehicle manufacturers.
- Locking clip or lock-off is used incorrectly.
- Carrying handle is not used in an approved position for vehicle travel.

TECH TIP

The use of tethers on a rear-facing car seat is uncommon in the United States.

A rear-facing car seat should only be tethered when recommended and specifically allowed by the car seat and vehicle manufacturers.



VIDEO—INSTALL A REAR-FACING CAR SEAT

Learn the steps to install a rear-facing car seat.



ACTIVITY—INSTALL REAR-FACING CAR SEATS

1. Work in small groups.
2. Choose both a rear-facing only and a convertible/all-in-one car seat to take outside with you.
3. Do the installations as indicated on the following table.
4. Have an Instructor check and approve each installation. Be prepared to explain the steps and how the car seat is locked in place.
5. Be ready to show the Instructors how to tighten and loosen the harness on each car seat.

Install	Rear-facing Only with Base	Rear-facing Only without Base	Rear-facing Convertible/ All-in-One
Lap-and-Shoulder Belt			
Lap-and-Shoulder Belt with Locking Clip			
Lower Anchors			



LEARN • PRACTICE • EXPLAIN—COMMON CAREGIVER QUESTIONS

Working with a partner, practice answering the following common caregiver questions.

1. I have two children. Which child should go in the middle of the back seat?
2. Can I leave the carry handle up and dangle toys from the car seat to keep my child happy?
3. Should I use the lower anchors or the seat belt? Which is safer?

Identifying Misuse



ACTIVITY—IDENTIFY REAR-FACING CAR SEAT MISUSE

Determine the misuse demonstrated in each photograph.



Error:



Error:



Error:



Error:



Error:



Progress Check

1

How do you determine which harness slots to use for a rear-facing child?

2

What do you need to check to be sure a child is properly secured in a rear-facing car seat?

3

How do you determine the correct belt path on the car seat?

4

How do you test the tightness of a rear-facing car seat?

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- 2 Durbin, D.R., & Committee on Injury, Violence, and Poison Prevention. (2011). Technical report—Child passenger safety. *Pediatrics, Apr 127*(4), e1050-66.
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NOTES 

9

Forward-Facing Car Seats

MODULE OBJECTIVES



- **DESCRIBE** when children should move to a forward-facing car seat.
- **IDENTIFY** types of forward-facing car seats.
- **EXPLAIN** steps for forward-facing car seat use and installation.
- **EXPLAIN** best practices and caregiver choice about forward-facing car seats.
- **IDENTIFY** forward-facing car seat misuse.

Once a child outgrows a rear-facing car seat's weight or height limits, best practice is for the child to move to a forward-facing car seat with a harness until the child reaches the maximum weight or height limits of the car seat as allowed by the car seat manufacturer.

When to Move to Forward-Facing

Caregivers may have difficulty determining when it is time to move their child from a rear-facing to a forward-facing car seat. Requirements for car seats also include minimum weights, heights, and ages for each mode. Check the labels and car seat instruction manual before moving a child to a new car seat or mode.

- The following guidelines may help caregivers in making this decision.
 - **GOOD:** The child is moved to a forward-facing car seat when the minimum age, weight and height requirements for that car seat are met, although the child still meets the height and weight limits for their rear-facing car seat.

- **BETTER:** The child is moved to a forward-facing car seat while within the rear-facing weight and height limits of their car seat as allowed by the car seat manufacturer, but also within the forward-facing age, weight and height limits of the car seat.
- **BEST:** The child uses a rear-facing car seat until reaching the maximum weight or height limit allowed by the car seat manufacturer.
- Caregivers should never use a car seat outside the age, weight, or height limits defined by the car seat manufacturer.

Types of Forward-Facing Car Seats

There are five types of forward-facing car seats.

- Forward-facing convertible
- Combination
- Forward-facing all-in-one
- Forward-facing only
- **Integrated (built-in)**

TECH TIP

Be sure to review the car seat instruction manuals for information specific to using the car seats forward-facing.

There may be car seats that do not fit into these categories, and car seat manufacturers may create new types of car seats in the future.

FORWARD-FACING CONVERTIBLE CAR SEATS

A convertible car seat can be used rear-facing or forward-facing. Once a child reaches the maximum weight or height limit for rear-facing use, it is time to switch to forward-facing use.

- Review the car seat instruction manual and car seat labels to ensure correct use of the belt path, tether, harness slots, recline angle, and age/weight/height limits.



Forward-facing convertible car seat

COMBINATION CAR SEATS

A combination car seat can be used with its internal harness or as a booster seat. Once a child reaches the maximum weight or height limit for the harness system, it is time to use the car seat as a booster. (Proper booster seat use will be discussed in the next module.)



Combination car seat

ALL-IN-ONE CAR SEATS

An all-in-one car seat can be used rear-facing, forward-facing with its internal harness, or as a booster seat.

- All-in-one car seats may be named differently by car seat manufacturers depending on how the manufacturer defines the possible modes of use of the seat.
- The following are the most commonly seen all-in-one seats.
 - 3-in-1 car seats (rear-facing, forward-facing, and high back booster)
 - 4-in-1 car seats (rear-facing, forward-facing, high back booster, **backless booster**)



All-in-one car seat

FORWARD-FACING ONLY CAR SEATS

A forward-facing only car seat is used as its name indicates—forward-facing only with a harness. This car seat does not have a rear-facing or booster seat mode.



Forward-facing only car seat

INTEGRATED CAR SEATS

Some vehicles have car seats built into the vehicle seat. Check the vehicle owner's manual for instructions as well as weight and height limits.

- Some integrated seats are booster seats only and will not have a 5-point harness.
- Integrated seats may need to be replaced after a motor vehicle crash. Check the vehicle owner's manual for instructions.



An integrated car seat is built in to the vehicle

Steps for Forward-Facing Car Seat Use

The steps below can be applied to all five types of forward-facing car seats.

STEP 1: SELECTION

Choose the right car seat.

- The car seat should be appropriate for the child's weight, height, and developmental level.
- The child meets the minimum age requirement for the car seat (if the manufacturer provides a minimum age requirement).
- The car seat should fit in the caregiver's vehicle.
- The caregiver is able to use the car seat correctly every time.

TECH TIP

Some car seat manufacturers specify a minimum age for use of a car seat forward-facing. Check specific use guidelines for the car seat.

STEP 2: DIRECTION

Face the car seat the right way.

A child should remain in a forward-facing car seat with a harness until reaching the maximum weight or height limit allowed by the car seat manufacturer.

- Some states have laws defining how long a child must remain in a forward-facing car seat with a harness.

TECH TIP

General use guidelines including weight and height limits can be found on the labels on the car seat. Refer to the car seat instruction manual for more specific use information for forward-facing.

STEP 3: LOCATION

Choose an appropriate location in the vehicle.

Not all seating positions in the vehicle are acceptable for car seat use. Consider the seating needs of other passengers in the vehicle.

- To secure a car seat, the vehicle seat must face the front of the vehicle. Do not use side-facing jump seats or vehicle seats that face the rear of the vehicle.
- Consideration should be given to air bag locations.
- Check both the vehicle owner's manual and car seat instruction manual to determine if the car seat can be used with an inflatable seat belt.
- Cargo areas are not designed for passenger seating under any circumstances.
- If possible, choose a seating position with an available tether anchor. Use of a tether increases safety by limiting forward movement and rotation of the car seat.
- Weight limits on lower anchors and tether anchors can affect the seating position choice.
- There is a perception that, as long as the car seat fits and can be installed correctly, the rear center seating position is safer because it is furthest from the point of impact in any direction. However, some rear center seating positions are not usable or compatible, per the car seat and/or vehicle manufacturers.
- Check both the vehicle owner's manual and the car seat instruction manual to see if borrowing of lower anchors is allowed in center seating positions. If use of lower anchors is not allowed, install the car seat with the vehicle seat belt.

STEP 4: HARNESS ADJUSTMENT AND FIT

Adjust the harness to fit the child properly.

Proper harness height in a forward-facing car seat must always be at or above a child's shoulders. The harness needs to be snug and hold the child down in the car seat so they do not slide up in a crash and suffer ejection from the car seat. It is important to adjust the harness height according to the car seat instruction manual prior to installing the car seat in the vehicle.

The general method to obtain a proper harness fit includes:

1. Place the child with their back and bottom against the car seat back.
2. Adjust the harness straps at or just above the child's shoulders, according to the car seat instruction manual.
3. If there are multiple buckle strap positions, adjust per the car seat instruction manual. The buckle strap should be close to the child's body but the child should not be sitting on the strap.
 - Some car seat manufacturers have fixes to shorten the buckle strap. Check the car seat instruction manual.
 - Some car seat manufacturers have recommended buckle strap positions depending on mode of use or child size.



LEARN • PRACTICE • EXPLAIN—ADJUST HARNESS HEIGHT AND BUCKLE STRAP

Using a car seat, practice explaining how to change the harness height and adjust the buckle strap for use forward-facing.

Forward-Facing Harnessing Errors

Caregivers often make the following forward-facing harnessing errors.

- Harness is not used.
- Harness is not placed on the child correctly.
- Harness straps are too loose.
- Harness is routed incorrectly.
- Harness is twisted.
- Harness is frayed or damaged.
- Harness straps are not at or above shoulders.
- Retainer clip is not at armpit level.
- Buckle strap is not routed through the slot closest to the child.
- Buckle strap is not used correctly according to car seat instruction manual.

STEP 5: INSTALLATION

Secure the car seat to the vehicle seat.

Forward-facing car seats can be installed with a seat belt or with lower anchors as long as the child does not exceed the lower anchor use weight limit. While the systems are different, they are equally safe. A tether is recommended to be used at all times as long as the child does not exceed the tether anchor use weight limit.

The general method to obtain a proper installation includes:

1. Place the car seat on the selected vehicle seat in the forward-facing direction (with the tether accessible for use in Step 7), ensuring that the recline adjustment is in the correct position per the car seat instruction manual.
2. Place the seat belt or lower anchor connector webbing, if appropriate, through the belt path as directed by the car seat manufacturer.
3. Buckle and lock the seat belt or secure the lower anchor connectors.

TECH TIP

Never place pool noodles or towels behind or under a forward-facing car seat unless allowed by the car seat manufacturer.

4. As needed, place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the seat belt or lower anchor connectors.
5. When using a seat belt, lock the belt at a fixed length using either a retractor, latch plate, or lock-off/locking clip.
6. Ensure the car seat does not move more than one inch (1") side-to-side or front-to-back when testing at the belt path using moderate force.
7. Be sure to follow the car seat instruction manual when using a tether, load leg, or other car seat features.
8. Place the child in the car seat and make final adjustments.
 - Make sure the child's back and bottom are flat against the car seat back.
 - Put the harness straps over the shoulders and buckle the harness.
 - The harness straps should be flat, not twisted.
 - Tighten the harness straps snugly. Be sure to pull extra webbing from the hip areas through to the shoulders or wherever the harness tightens. You should not be able to vertically pinch excess webbing at the shoulder once the harness is tightened. This is called the pinch test.
 - A snug strap should not allow any slack. It lies in a relatively straight line without sagging. It does not press on the child's flesh, or push the child's body into an unnatural position.
 - Secure and place the retainer clip (also known as the chest clip) at armpit level.

Forward-Facing Installation Errors

Caregivers often make the following forward-facing installation errors.

- Seat belt or lower anchor connector webbing is routed incorrectly.
- Installation is too loose.
- Seat belt is not locked.
- Rear-facing only car seat is used as a forward-facing car seat.
- Car seat is not installed at the correct recline angle, per the car seat instruction manual.
- Car seat is installed using two seat belts or using a seat belt and lower anchors together when it is not permitted by the car seat manufacturer.
- Lower anchor connectors are not attached to the appropriate lower anchors.
- Tether is not attached to the appropriate tether anchor.
- Lower anchors or tether are connected upside down.
- Car seat is installed borrowing lower anchors in a center seating position when not permitted by the car seat and/or vehicle manufacturers.
- Lower anchors and/or tether are being used beyond the permitted weight limits.
- Lower anchor connectors and/or tether, when not in use, are stored incorrectly.
- Tether is not used when a tether anchor is available.
- Only the tether is used to install the car seat to the vehicle seat.
- Tether is misrouted.
- Locking clip or lock-off is used incorrectly.

TECH TIP

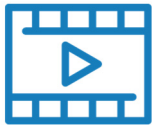
Always use the tether when within the weight limits specified by both the car seat and vehicle manufacturers.



LEARN • PRACTICE • EXPLAIN—COMMUNICATION SKILLS

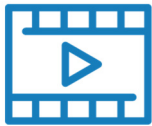
Practice explaining to a partner the following:

1. Where is the harness adjuster?
2. How do you adjust, tighten, and release the harness strap?
3. Where are the lower anchor connectors and tether stored when not in use?
4. How do you find the forward-facing weight and height limits on this car seat label?



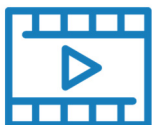
VIDEO—INSTALL A FORWARD-FACING CAR SEAT

Learn the steps to install a forward-facing car seat.



VIDEO—INCORRECT BELT ROUTING AND NO TETHER

Learn what happens with incorrect belt routing and no tether.



VIDEO—LOOSE LATCH AND NO TETHER

Learn what happens with loose LATCH and no tether.



ACTIVITY—INSTALL FORWARD-FACING CAR SEATS

1. Work in small groups.
2. Choose a convertible, combination, and all-in-one car seat to take outside with you.
3. Do the installations as indicated on the following table.
4. Have an Instructor check and approve each installation. Be prepared to explain the steps and how the car seat is locked in place.
5. Be ready to show the Instructors how to tighten and loosen the harness on each car seat, and connect the tether to the tether anchor (if the car seat manufacturer allows).

Install	Lap-and-Shoulder Belt with Tether	LATCH
Forward-Facing Convertible		
Combination		
Forward-Facing All-in-One		



LEARN • PRACTICE • EXPLAIN—COMMON CAREGIVER QUESTIONS

Working with a partner, practice answering these common caregiver questions.

1. My child is two years old and weighs 39 pounds. Which car seat should I buy?
2. My child fits in the harness but weighs 53 pounds. Can I keep using this car seat?
3. Do I have to use the tether?

Other Restraint Types—Vests and Harnesses

In the field, you may encounter a child restrained by a **vest** or harness. Vests and harnesses are considered the same thing.

Vests and harnesses may be used:

- For multiple children in a vehicle with narrow seating positions.
- For children with behavioral issues, excess weight, or other situations when a conventional car seat cannot be used.
 - In order to use a vest, a child must have good head control.

TECH TIP

Some vests and harnesses are made for school bus use only. Make certain to check the manufacturer instructions for use guidelines.



Example of a vest

Identifying Misuse



ACTIVITY—IDENTIFY FORWARD-FACING CAR SEAT MISUSE

Determine the misuse demonstrated in each photograph.



Error:



Error:



Error:



Error:



ACTIVITY—EXAMINE FORWARD-FACING CAR SEAT MISUSE

1. Work in small groups.
2. Carefully examine the information provided about the child's age, weight, and height. Also, check the labels on the car seats that have been set up in the classroom.
3. Take notes on what you discover regarding car seat misuse for each scenario.
4. Use the sample checklist provided to record your answers for at least two of the scenarios.

	Car Seat #1	Car Seat #2
1. What is the car seat make, model, and date of manufacture?		
2. What is the type of car seat used?	<input type="checkbox"/> Rear-Facing Only <input type="checkbox"/> Convertible <input type="checkbox"/> All-in-One <input type="checkbox"/> Combination	<input type="checkbox"/> Rear-Facing Only <input type="checkbox"/> Convertible <input type="checkbox"/> All-in-One <input type="checkbox"/> Combination
3. Is the car seat type appropriate for age/size?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Is the car seat under recall?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
5. Does the child fit in the car seat per height and weight requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
6. Are the harness straps routed correctly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
7. Is the harness snug enough?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
8. Is the retainer clip positioned on child correctly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
9. Are any non-approved products used?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No



Progress Check

1

How do you determine which harness slots to use for a forward-facing child?

2

Describe correct harness fit for a child in a forward-facing car seat.

3

How do you find the correct belt path?

4

How tightly should a forward-facing car seat be installed?

5

What is the benefit of using a tether, and when should you use one?

NOTES 

10

Booster Seats and Seat Belts

MODULE OBJECTIVES



- **DISCUSS** how booster seats protect children.
- **IDENTIFY** types of booster seats.
- **SECURE** a booster seat.
- **EXPLAIN** best practices about booster seats and seat belts to caregivers.

Booster seats should be used for children who have outgrown their harnessed car seat until they are big enough and mature enough to fit in and use a seat belt correctly. Seat belts are made for adults.

How Booster Seats Protect Children

Booster seats are designed to be used with the vehicle lap-and-shoulder belt.

- A booster seat raises and positions a child so the vehicle's lap-and-shoulder belt fits properly.
- The raised seating surface of a booster seat lets the child bend their knees over the booster seat, which keeps the lap belt snug across the child's hips and upper thighs, and the shoulder belt across their chest.

TECH TIP

Booster seats should never be used with lap-only belts. Since lap-only belts are used on airplanes, booster seats are not approved for airplane use.

Why Booster Seats Are Important

Vehicle seats and seat belts are designed to fit adults. Children are not small adults.

- Children's pelvic bone structure is not fully developed until after puberty. The developing pelvis lacks the structure needed to keep the lap belt properly positioned over the hips in a crash. When the lap belt rests on the child's soft stomach rather than the hard hips, it increases the risk of severe abdominal injuries, or **seat belt syndrome**, during a crash.
- When children are too small to use a seat belt correctly, they tend to put the shoulder belt under their arm or behind them, which is extremely dangerous and removes the upper body protection provided by a correctly used seat belt.



Booster seats must be used with a lap-and-shoulder belt.

Booster seat use reduces the risk for serious injury by 45% for children age four to eight years old when compared to seat belt use alone.'

SEAT BELT SYNDROME

Seat belt syndrome describes injuries from using only a lap belt or the lap portion of a lap-and-shoulder belt.

- These injuries result when the occupant's body folds in half over the lap belt during the human crash stage of a frontal crash.
- When this happens, the lap belt applies extreme force along the occupant's pelvis to the mid-section.
- Seat belt syndrome injuries typically include severe abdominal injuries and/or fractures of the lumbar (lower) spine.
- When a child slouches, submarines, or places the shoulder portion of a lap-and-shoulder belt behind their back, these injuries can occur as well.
- Additionally, securing an occupant only at hips or waist without restraining the upper body can cause the occupant's head to contact their knees and/or the interior of the vehicle, leading to serious head and neck injuries.

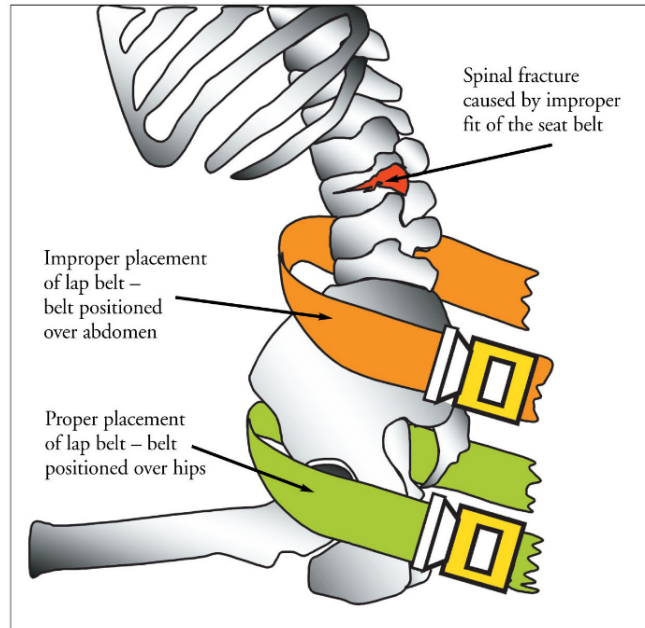
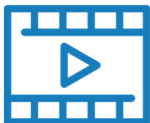


Diagram of proper and improper placement of lap belt



Lap-only belt use in a frontal crash can cause abdominal, spinal, and head injuries.



VIDEO—BOOSTER SEAT EFFICACY

This video demonstrates the protection offered by a booster seat compared to a seat belt. Video courtesy of: Center for Injury Research and Prevention at Children's Hospital of Philadelphia.

Types of Booster Seats

There are two types of booster seats.

- High back
- Backless

There are also car seats that can be converted into booster seats—high back, backless, or both—depending on the specific model.

- Combination car seat (in booster mode)
- All-in-one car seat (in booster mode)

Additionally, some vehicles have integrated (built-in) booster seats in the vehicle seat, which are considered a type of high back booster seat.



High back booster seat



Backless booster seat



Combination car seat in booster mode



All-in-one car seat in booster mode



Integrated booster seat

(Image courtesy of Volvo: media.volvocars.com)

HIGH BACK BOOSTER SEATS

A high back booster seat is especially recommended for vehicles that have a low seat back or do not have a head restraint. However, some high back boosters are required to have full support from the vehicle seat. Always check the car seat instruction manual for specific use guidelines.

- A high back booster seat provides head, neck, and back support for the child.
- A high back booster seat may ease the transition from a harnessed car seat by providing a similar restraint environment.
- Some high back booster seats can convert to backless booster seats.

TECH TIP

General use guidelines including weight and height limits can be found on the labels on the booster seat.

Refer to the car seat instruction manual for more specific use information.



High back booster seats

BACKLESS BOOSTER SEATS

With a backless booster seat, the child uses the vehicle's seat back or head restraint for head, neck, and back support. Always check the car seat instruction manual for specific use guidelines.

- A backless booster seat must be used in a vehicle seating position that has a head restraint if the tops of the child's ears are above the vehicle seat back.



Backless booster seats

- Most backless booster seats come with a shoulder belt positioner to adjust the shoulder belt height on the child, if needed.
 - Use only shoulder belt positioners provided with the booster seat.



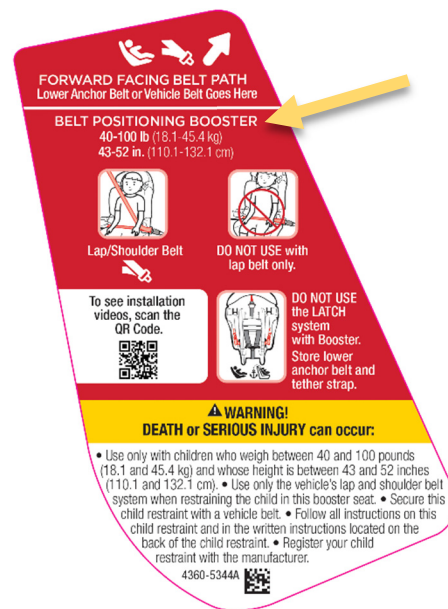
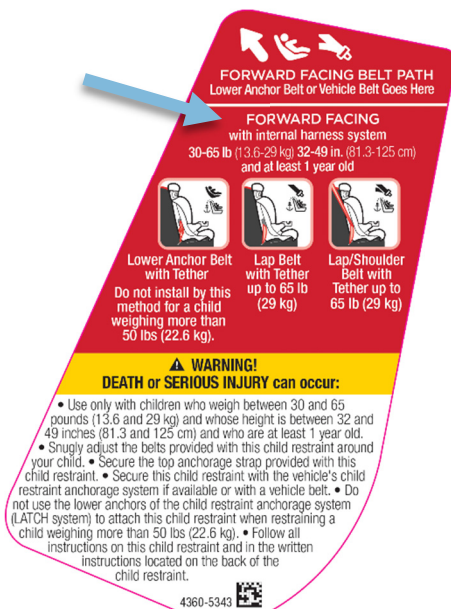
Backless booster belt positioning clip

COMBINATION AND ALL-IN-ONE CAR SEATS IN BOOSTER MODE

When a child has outgrown the weight or height limits of the internal harness of a combination car seat or an all-in-one car seat, the harness can be stored after removal and the car seat can be used as a booster seat. Caregivers must carefully follow the car seat instruction manual for changing the car seat from a harnessed car seat to a booster seat.



All-in-one car seat in high back and backless booster modes



There may be multiple labels on a car seat for different modes of installation.

Be sure to read the weight and/or height limits for specific usage.

INTEGRATED (BUILT-IN) BOOSTER SEATS

Some vehicles have booster seats built into the vehicle seat. The built-in booster seat pulls out of the rear vehicle seat and can be stowed when not in use. Check the vehicle owner's manual for instructions as well as weight and height limits.



*Integrated (built-in) booster seat
(Image courtesy of Volvo: media.volvocars.com)*

- Not all vehicles offer this option.
- Integrated booster seats are considered a vehicle part.
- Integrated booster seats may need to be replaced after a motor vehicle crash. Check the vehicle owner's manual for instructions.

Steps for Booster Seat Use

The following steps apply to booster seat use.

STEP 1: SELECTION

Choose the right booster seat.

Consideration for booster selection should be given to the following.

- The booster seat is appropriate for the child's weight, height, and developmental level.
- The child meets the minimum age requirement for the booster seat (if minimum age is specified by seat manufacturer).
- The booster seat fits in the caregiver's vehicle, and can be used according to the guidelines in the car seat instruction manual.
- The booster seat properly positions the vehicle lap-and-shoulder belt on the child.
- The top of child's ears should not be above the back of the vehicle seat or the top of the booster seat's head restraint.
- The caregiver is able to use the booster seat correctly every time.
- A child should remain in a booster car seat until reaching the maximum weight or height limit allowed by the car seat instruction manual.

TECH TIP

There may be differences between state or local laws and manufacturer guidelines for booster seat use. Follow the manufacturer guidelines while adhering to applicable laws.

Skipping the booster seat step or moving to a booster seat too early is common and unsafe. In 2015, fewer than half of children age four to seven years old were using booster seats.²

Conversations with Caregivers

Sometimes children and/or caregivers will be resistant to using a booster seat when appropriate for the child.

- Be open to listening to the reason for their concerns.
- Respectfully start a dialogue about safety in the vehicle. Explain why riding in a booster seat is so important.
- When possible, include children in the conversation. Highlight how booster seats help them see better out the vehicle windows, and how the seat belt will fit better.
- Encourage the caregiver to refer to these seats as booster seats instead of car seats.
- Encourage the caregiver to research options available for a booster seat that appeals to the child, and to involve the child in the selection of the booster.



LEARN • PRACTICE • EXPLAIN—MOTIVATE FOR BOOSTER SEAT USE

With a partner, practice how you might motivate a child and/or caregiver to use a booster seat instead of moving too early to a seat belt.

STEP 2: DIRECTION

Face the booster seat the right way.

All booster seats are used forward-facing.

STEP 3: LOCATION

Choose an appropriate location in the vehicle.

Not all seating positions may be suitable for booster seat use. Remember to take into consideration the seating needs of other passengers in the vehicle.

- The vehicle seat must face forward to secure a booster seat on it.
- A booster seat must be used in a vehicle seat with a lap-and-shoulder belt. If the vehicle seat only has a lap belt, another seating location must be used.
- Check both the vehicle owner's manual and car seat instruction manual to determine if the booster seat can be secured with an inflatable seat belt.

TECH TIP

A booster seat should be secured in the vehicle at all times. When not buckled or connected to lower anchors, the booster seat may become a projectile, causing injury to vehicle occupants during a crash or sudden stop.

Booster Seats in the Front Seat

While it is recommended that children ride in a back row of the vehicle, if a child must ride in the front seat:

- The child must be correctly restrained in a booster seat using the vehicle's lap-and-shoulder belt, and be mature enough to sit properly for the entire ride.
- The vehicle seat should be moved back as far as possible from the dashboard and air bags, and caregivers should teach the child not to lean forward.

STEP 4: ADJUST

Adjust the booster height to fit the child properly.

Some high back boosters—as well as combination car seats and all-in-one car seats used in the booster mode—have adjustable seat backs. It is important to adjust the booster seat back height according to the car seat instruction manual prior to securing the booster seat in the vehicle.

The general method to obtain a proper seat belt fit includes:

1. Place the child with their back and bottom flat against the booster seat back.
2. When possible, adjust the booster seat back according to the car seat instruction manual. Typically, the shoulder belt guides should be level with the top of the child's shoulders.



LEARN • PRACTICE • EXPLAIN—BOOSTER SEAT CONVERSIONS

With a partner, practice explaining how to convert a combination car seat to a booster and back again, and how to convert a high back booster to a backless booster.

Practice converting a high back booster to a backless booster.

Be sure to review the car seat instruction manual.

STEP 5: SECURE

Secure the booster seat to the vehicle seat.

Always check the car seat instruction manual for information specific to securing the booster seat.

- Most booster seats rest on the vehicle seat and are not locked into place. The child's weight and the vehicle lap-and-shoulder belt hold the booster seat in place.
- Some booster seats have lower anchors to position and keep the booster seat in place.
- Boosters converted from harnessed car seats will have lower anchor connectors and tethers that may be used to position and keep the car seat in place if the car seat instruction manual permits using LATCH in the booster seat mode.
- Anchor weight limits do not apply because the seat belt manages the crash forces.

Secure the child in the booster seat.

Following is the general method to secure the child in a booster seat.

- The lap belt should be positioned low and across the child's hips, touching the upper thighs—never across the abdomen.
 - Generally, the lap belt will be positioned under the arm rests on the booster seat. Always check the car seat instruction manual for specific information on belt routing.
- The shoulder belt should be across the child's chest, making contact with the child's shoulder.
 - The shoulder belt guide or positioner should be located at or just above the child's shoulder.
 - Some vehicles may have a shoulder belt positioner that can be used with a backless booster seat.
- If adjustable, move the vehicle head restraint to support the child's head or improve fit in the vehicle. The top of the child's ears should not be above the top of the vehicle seat.



Example of a shoulder belt positioner in a vehicle with a child

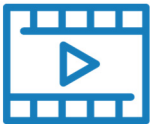


Example of a shoulder belt positioner in a vehicle

Booster Seat Use Errors

Caregivers often make the following booster seat use errors.

- Child does not meet minimum age requirement for the booster.
- Lap portion of the seat belt is not routed according to the car seat instruction manual.
- Shoulder belt portion of the seat belt is not routed according to the car seat instruction manual.
- Booster seat back is not adjusted according to the car seat instruction manual.
- Shoulder belt positioner is not used with a backless booster seat as specified by the car seat instruction manual.
- Booster seat is used with a lap-only belt.



VIDEO—USING A HIGH BACK BOOSTER SEAT

This video provides guidance on the use of high back booster seats.



ACTIVITY—SECURE A BOOSTER SEAT

Practice securing types of high back booster seats and backless booster seats. Use the table that follows to take notes as you work through the activity. Follow these steps to use/secure each booster seat correctly.

1. Work in small groups.
2. Choose a high back booster seat, backless booster seat, combination car seat, and all-in-one car seat to take outside with you, as well as a size-appropriate doll.
3. Place each booster seat in the chosen vehicle seating position.
4. Place a doll in the booster seat.
5. Buckle the seat belt.
6. Make sure the seat belt fits properly with the lap belt low across the hips, touching the upper thighs, and the shoulder belt across the chest routed per the car seat instruction manual.
7. If available and necessary, adjust the vehicle or booster seat shoulder belt positioning devices, and be sure to position according to the instructions.
8. With a backless booster seat, adjust the vehicle head restraint, if needed.

Secure	Lap-and-Shoulder Belt	Uses Lower Anchor Connectors	Uses Tether
High Back Booster Seat		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Backless Booster Seat		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Combination Car Seat (Booster Mode)	<input type="checkbox"/> High Back Booster Mode <input type="checkbox"/> Backless Booster Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
All-in-One Car Seat (Booster Mode)	<input type="checkbox"/> High Back Booster Mode <input type="checkbox"/> Backless Booster Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Recommendations for Children in Seat Belts

Vehicle seat belts can be used to safely secure a child in the back seat of a vehicle when the child can be appropriately positioned in the seat belt.

Consider the following questions.

- Can the child keep their back against the vehicle seat without slouching?
- Can the child keep their knees naturally bent over the edge of the vehicle seat?
- Can the child keep their feet flat on the floor?
- Does the lap belt lie snugly across the upper thighs, low on hips, not the stomach?
- Does the shoulder belt lie snugly across the shoulder and chest, and not across the neck or face?

If the answer to any of these questions is no, the child will need to remain in a booster seat in this vehicle. Additionally, the child must stay in position for the entire ride.

Reminders: Seat Belt Use

When moving a child to use a vehicle seat belt, it is important to share the following reminders with caregivers.

- Children under 13 years of age should ride in the back seat.
- Children should not lean or rest against the inside of vehicles where air bags are located.
- Seat belts must never be shared. One person, one seat belt!
- Proper seat belt use should be followed at all times.
 - Backpacks should be removed prior to buckling up and stored in a cargo area.

TECH TIP

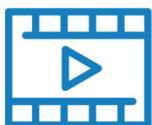
Remind caregivers that seat belt fit is different from vehicle to vehicle. They should check for seat belt fit in every vehicle in which the child rides.

TECH TIP

Emphasize to caregivers that they are important role models for the safe behavior of children.

TECH TIP

Encourage caregivers to make certain booster seats and seat belts are available and used correctly every time children ride in a vehicle, including car pools. While lap belts are not ideal, they are better than no protection at all.



VIDEO—BEYOND BOOSTER SEATS

This video demonstrates proper seat belt fit.

Seat Belt Positioners

A **seat belt positioner** is a device that is manufactured to alter the positioning of a lap-and-shoulder belt on a child, often when a child moves into using a seat belt too early. These devices are non-approved.

Seat Belt Use Errors

Caregivers often make the following seat belt use errors.

- Child moves into using a seat belt before they are big enough to correctly fit in it.
- Child skips the booster seat and moves from the harnessed car seat to the vehicle seat belt.
- Non-approved seat belt positioner is used.
- Child uses a lap-only belt when a lap-and-shoulder belt is available.
- Shoulder belt is under a child's arm or behind their back.
- Child buckles up wearing a backpack.



Example seat belt positioner, a non-approved device



Common seat belt misuse example



ACTIVITY—IDENTIFY SEAT BELT MISUSE

Determine the misuse demonstrated in each photograph.



NO!

Error:



NO!

Error:



NO!

Error:



NO!

Error:



LEARN • PRACTICE • EXPLAIN—MOTIVATE TO USE BEST PRACTICES

Now that you have learned about best practices for keeping children safe in car seats, booster seats, and seat belts, what do you do if a caregiver does not choose best practice even after being educated about the risks?

Practice this scenario with a partner.





Progress Check

1**Why is it important to use booster seats?**

2**When should a child ride in a booster seat?**

3**Does best practice differ from your local laws regarding booster seat use?**

4**What is the proper placement of the lap-and-shoulder belt when using a booster seat?**

5**When is a child ready to use a vehicle seat belt?**

REFERENCES

- 1 Arbogast KB, Jermakian JS, Kallan MJ, Durbin DR. (2009). Effectiveness of belt positioning booster seats: an updated assessment. *Pediatrics*, Nov 124(5), e1281-86.
<https://pediatrics.aappublications.org/content/pediatrics/124/5/1281.full.pdf>
- 2 Arbogast KB, Jermakian JS, Kallan MJ, Durbin DR. (2009). Effectiveness of belt positioning booster seats: an updated assessment. *Pediatrics*, Nov 124(5), e1281-86.
<https://pediatrics.aappublications.org/content/pediatrics/124/5/1281.full.pdf>

NOTES

11

Other Vehicles

MODULE OBJECTIVES



- **EXPLAIN** current recommendations for car seats and booster seats in school buses.
- **EXPLAIN** child passenger safety issues specific to 15-passenger vans.
- **IDENTIFY** appropriate restraints for use on airplanes.
- **EXPLAIN** issues associated with emergency transportation.

CPS Technicians now understand how vehicle design impacts the correct use of car seats and booster seats. This module provides basic information on school buses, 15-passenger vans, airplanes, and emergency vehicles.

School Buses

School bus transportation is the safest form of ground transportation. Students are about 70 times more likely to get to school safely when taking a school bus than when traveling by car.¹

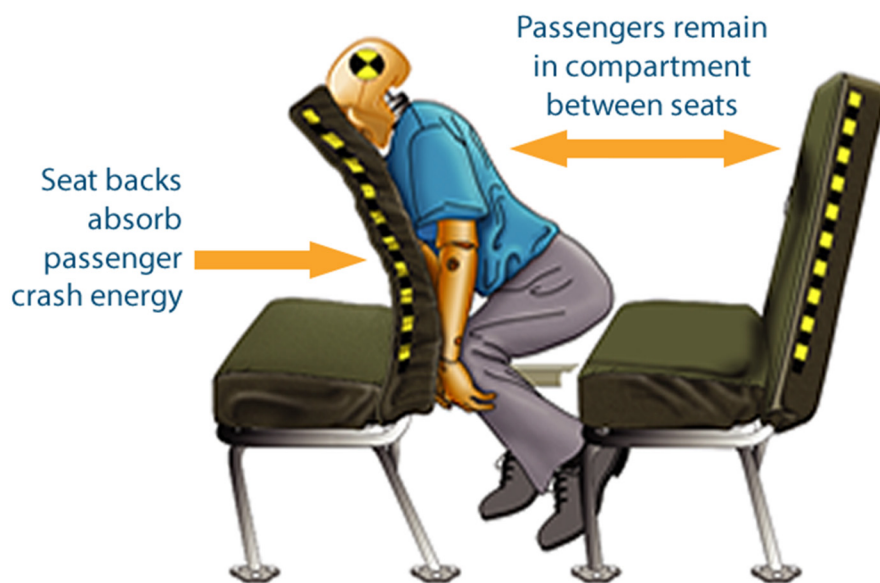
- Buses are larger and heavier than most other vehicles. Crash forces are distributed throughout the vehicle differently, and are also experienced by the occupants differently.
- School buses are equipped with flashing red lights, cross-view mirrors, and stop-sign arms. They also have protective seating, high crush standards, rollover protection features, and are designed to be highly visible.

- Passenger seating and crash protection, known as **compartmentalization**, is required on school buses per Federal Motor Vehicle Safety Standard (FMVSS 222).

- Seats on school buses must have flexible, energy-absorbent, high seat backs spaced within specific regulatory limits.
- The combination of energy-absorbent seat backs and narrow spacing creates a compartment within which each occupant is confined in a frontal crash.

TECH TIP

For more information on school bus safety, go to nhtsa.gov/road-safety/school-bus-safety.



Compartmentalization on a school bus

SEAT BELTS ON SCHOOL BUSES

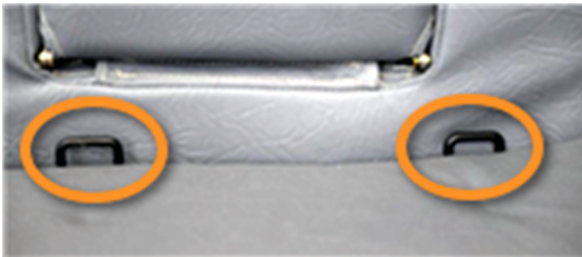
Seat belts may or may not be present on school buses. Some states require that all school buses have seat belts.

- School buses with a gross vehicle weight rating (GVWR) of greater than 10,000 lbs. may optionally have lap belts or lap-and-shoulder belts with lockability.
- School buses with a GVWR of 10,000 lbs. or less built after October 2011 will have lap-and-shoulder belts with lockability.
- Retrofitting seat belts on existing school bus seats is possible only when the school bus manufacturer instructions are followed.

LATCH ON SCHOOL BUSES

Lower anchors and tether anchors may be found on school buses.

- School buses with a GVWR of greater than 10,000 lbs. may optionally have lower anchors.
- School buses with a GVWR of 10,000 lbs. or less will have lower anchors in two seating positions.
- Tether anchors are not commonly available on school buses.



Examples of lower anchors on a school bus



SCHOOL BUS SAFETY RECOMMENDATIONS

NHTSA offers the following recommendations concerning transporting children on school buses.

- Preschool age children (between the ages of three and five) should be properly restrained in car seats or other child restraints meeting FMVSS 213 when they ride on a school bus.
 - Booster seats cannot be used on a school bus. This is true even when lap-and-shoulder belts are present.
- Children with special transportation needs should have an Individual Education Plan (IEP) which outlines how to transport them safely.

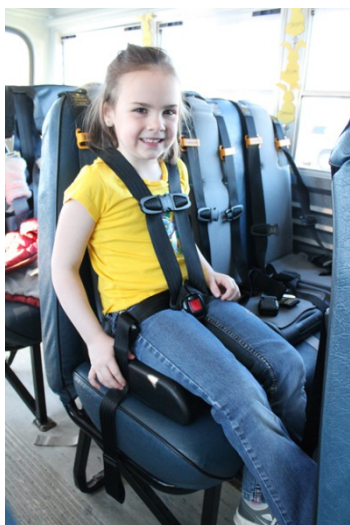
TECH TIP

As a CPS Technician, it is important to know and understand the state law concerning transporting pre-school age children, and whether or not seat belts are required on school buses.

SCHOOL BUS RESTRAINT OPTIONS

There are options for children who need car seats or other child restraints on a school bus (when a bus is equipped to accommodate), such as the following.

- Conventional car seats
- Harnesses and vests
- Integrated car seats
- School bus specific child restraint systems
- Wheelchairs and medical strollers



School bus specific child restraint system



Integrated car seat



Conventional car seat

RESOURCES FOR SCHOOL BUS AND CHILD PASSENGER SAFETY

Visit the following resources for more information about transporting children on school buses.

- American School Bus Council
 - schoolbusfacts.com/wp-content/uploads/2017/01/SafetyFeatures.pdf
- Proper Use of Child Safety Restraint Systems in School Buses
 - one.nhtsa.gov/people/injury/buses/busseatbelt/index.html
- Contact your state highway safety office to learn more about if your state requires seat belts on school buses.

15-Passenger Vans

Some childcare providers or schools use 15-passenger vans to transport children. NHTSA strongly recommends—and some states require—that childcare providers/schools use a school bus, the safest form of ground transportation, rather than a 15-passenger van for the transportation of children using car seats.



- At times, childcare providers/schools may overload a 15-passenger van.
 - When fully loaded, the center of gravity in a 15-passenger van shifts rearward and upward, increasing the likelihood of a rollover.
- The roof should not be loaded.
 - Roof cargo will be above the center of gravity of the vehicle and will increase the likelihood of a rollover.
- It is important that the van be driven by an experienced driver who is familiar with the handling characteristics of their vans, especially when fully loaded.

TECH TIP

Refer to NHTSA's 15-Passenger Van Safety Actions Update (April 2008) for state-by-state guidelines pertaining to vans used for school transportation at nhtsa.gov.

Airplanes

The Department of Transportation's Federal Aviation Administration (FAA) encourages—but does not require—the use of car seats on airplanes for children based on their weight.²

- Most airlines allow children under the age of two to fly free of charge as lap children. This is not considered best practice. Turbulence (rough flying) can happen with little or no warning. Car seats are the safest place for children on airplanes.
- The FAA does not permit the use of booster seats and harnesses/vests specific to passenger vehicles during taxi, take-off and landing, and encourages families to check them as luggage.



Child shown in car seat on airplane

CAREGIVER REMINDERS

Prior to flying with children, caregivers should do the following.

- Verify car seat policies with the airline.
- Measure the width of the car seat. A car seat should fit in most airplane seats if it is no wider than 16 inches.
- Verify the car seat has the mandatory label stating it is certified for use on aircraft.



Example of car seat label with approval for use on aircraft

- Check the car seat instruction manual for information specific to use on an airplane.
 - The use of a rear-facing only car seat base may not be permitted on an airplane. If not approved by the car seat manufacturer, use the carrier only.
 - Some airlines use inflatable seat belts in certain seating positions. Many car seat manufacturers do not allow use of their products with an inflatable seat belt. Check the car seat instruction manual for specific information. Otherwise, the child must be moved to a different seat.

TECH TIP

Encourage caregivers to know where the label with aircraft approval statement is located on the car seat, and to have access to the car seat instruction manual during travel.

CARES Airplane Safety Harness

The FAA has approved the CARES Airplane Safety Harness, and recently established guidelines for the use of this restraint system on airplanes only—not in passenger vehicles—as an alternate to a car seat.

The CARES Airplane Safety Harness is designed for children who meet the following criteria.

- Age one year and older
- Between 22 and 44 pounds
- Less than 40 inches tall

CARES Harnesses use the airplane lap belt and an additional belt and shoulder harness that goes around the seat back.



CARES Harness

Emergency Transportation

LAW ENFORCEMENT VEHICLES

Where law enforcement equipment is present and correct installation is not possible, children should be transported in another vehicle.

- A car seat or booster seat can never be installed in law enforcement vehicles if a prisoner screen is present. This screen does not allow enough space for the forward movement of the child's head.
- Plastic or prisoner vehicle seats, commonly found in police vehicles, are also not compatible for the installation of car seats and booster seats.

AMBULANCES

Currently, there are not any federal standards in the United States for devices used to secure children in ambulances.

- Agencies are encouraged to develop and follow guidelines to transport children safely.
 - Caregivers should not hold children on an ambulance cot.
 - Emergency vehicles may have side-facing or rear-facing vehicle seats. There are no standards for crash testing a car seat or booster seat on a side-facing or rear-facing vehicle seat. A car seat or booster seat should not be used in these seating positions.
 - Captain's chairs may have an integrated car seat.
 - Additional information is available from NASEMO (National Association of State EMS Officials) in the document **Safe Transport of Children by EMS: Interim Guidance** (interim guidelines by NASEMO), published March 8, 2017. See nasemo.org/wp-content/uploads/Safe-Transport-of-Children-by-EMS-InterimGuidance-08Mar2017-FINAL.pdf.
- When possible, non-patient children in an emergency situation should be transported in another vehicle.
- It is important to secure the emergency medical services provider and equipment. Children are only as safe as the environment around them. Unrestrained medics and equipment can be extremely hazardous.



Child secured in an integrated car seat on a captain's chair in an ambulance

CPS Technician Enrichment Trainings

The following enrichment trainings related to transportation in other vehicles are available to Child Passenger Safety Technicians.

- Child Passenger Safety Restraint Systems on School Buses
 - cpsboard.org
- Improving Occupant Protection for Non-Critical Pediatric Patients in Ambulances: A Training Curriculum for EMS Personnel
 - preventinjury.pediatrics.iu.edu





Progress Check

1

If a caregiver asks you if school buses are safe, what might you say?

2

What are some factors to consider when selecting a car seat to use on an airplane?

3

What are some factors to consider when transporting children in emergency vehicles?

REFERENCES

- 1 National Highway Traffic Safety Administration (NHTSA). School bus safety.
<https://www.nhtsa.gov/road-safety/school-bus-safety>
- 2 Federal Aviation Administration (FAA). Flying with children.
https://www.faa.gov/travelers/fly_children/

NOTES 

12

Interacting with Caregivers

MODULE OBJECTIVES



- **EXPLAIN** effective communication techniques used to engage with and educate caregivers.
- **RECOGNIZE** factors that may influence caregiver behaviors.
- **PRACTICE** applying new child passenger safety skills.

CPS Technicians should focus on educating caregivers in a positive and supportive manner, and motivate them to utilize best practices regarding child passenger safety.

Successful Interaction and Communication

CPS Technician goals are for the child to leave safer than when they arrived for the seat check, and the caregiver to leave better educated, empowered, and confident in working with their car seat or booster seat.

In order to accomplish these goals, CPSTs should:

- Engage the caregiver in the education process from beginning to end.
- Be positive and encouraging. Praise what the caregiver has done correctly.
- Promote best practice, but accept caregiver choices representing good and better practices.
- Empower the caregiver to feel confident about the installation and use of their car seat or booster seat.

FACTORS INFLUENCING CAREGIVER BEHAVIOR

Caregivers are motivated by many factors including safety, compliance with the law, and convenience—which in turn may affect how receptive the caregiver is to education.

Consider what factors might be influencing the caregiver’s decision to attend an event and/or in how they are transporting their child.

- Do socio-economic challenges exist?
- Are there cultural differences that could affect the caregiver’s knowledge or attitude about safety?
- Is the caregiver attending through a program to get a traffic ticket waived?

Consider what factors may be influencing the caregiver’s mood or attitude in general.

- Did the caregiver arrive late to the appointment?
- Did the caregiver get lost on the way to the appointment?
- Is the caregiver feeling stressed or anxious?
- Is the child being uncooperative during the appointment?

Effective Communication Techniques

Every interaction with a caregiver will be different.

Below are some communication techniques that will help to engage the caregiver.

- **KEEP IT SIMPLE:** When educating, keep the audience in mind. Abbreviations may be confusing to caregivers. Each caregiver will have a different level of understanding of technical terms.

For example:

- Caregivers may not know what ALR or ELR means or even be familiar with retractors. “The part that winds up and stores the seat belt” may be easier to understand.
- CPS means “Child Protective Services” to some and “Child Passenger Safety” to others.

- **KEEP IT SHORT:** CPS Technicians share a great deal of information with caregivers in a single meeting. Caregivers learn more effectively when information is spread out over a longer period of time. It may be difficult for caregivers to learn everything all at once. Focus on a few key messages.

For example:

- Select information to address immediate needs.
- Encourage the caregiver to make another appointment when it is time for the next step, such as turning the child forward-facing or moving to a booster seat.
- Leave the caregiver with additional resources to look over at home.

TECH TIP

When possible, use the caregiver's primary language or an interpreter.

The Diversity Resource Library found at cpsboard.org has child passenger safety information in different languages.

Did you know people retain less than 40% of what they learned just nine hours later? It is important to be concise when sharing information.'

- **KEEP IT POSITIVE:** Keep in mind your tone of voice, non-verbal cues, and body language. Be positive and encouraging in interactions while respecting differences, e.g., cultural, religious, socio-economic.
- **KEEP IT REAL:** Research shows that it is often easier for learners to remember new information if it ties into real world situations.

For example:

- Invite the caregiver to record a video as you explain the proper installation and harnessing.

ENGAGING THE CAREGIVER

CPS Technicians should involve caregivers as active participants from the beginning to the end of the educational process, and learn the true meaning behind a caregiver's questions. Sometimes caregivers ask a question about one aspect, but upon further questioning you discover they really want help or information about something else. Ask follow-up questions to determine what caregivers need.



TECH TIP

Caregivers learn in many different ways.

Provide the caregiver as much hands-on time as possible.

Use a hands-on demonstration and then ask the caregiver to repeat the process while verbalizing what they are doing.

Having the caregiver demonstrate and explain what they are doing reinforces their understanding of the installation process.

Examples

When they ask...	They may really mean...
Which car seat is escape-proof?	My child can get out of the car seat by himself.
When can I turn her around?	I want to see my child.
Is it really safer to face the back?	I don't feel comfortable not being able to see my child.
Does my youngest child really need to be in the center of the back seat next to her brother?	My son may bother or poke her, causing a disruption in the car.
Can I move him to a seat belt yet?	He is pressuring me to move to a seat belt like all of his friends. I need the booster seat for my other child.

OPPORTUNITY FOR POSITIVE EDUCATION: SOCIAL MEDIA

CPS Technicians do more than educate at checkup events—they have many opportunities for community education, too. Social media provides an opportunity to engage with caregivers in a format that can easily be shared.

It is important to help caregivers make the safest choice possible for the children they transport. Consider the good, better, best recommendations whenever educating caregivers. Be compassionate and respectful of caregiver's decisions.

For example:

- **GOOD:** Thank them for having their child in a car seat.
- **BETTER:** Thank and compliment them for a specific installation technique they performed correctly.
- **BEST:** Thank them, compliment them, and suggest they go to a checkup event.



TECH TIP

Keep in mind that tone of voice and non-verbal body language cannot be seen through social media communication.

TECH TIP

It is important for everyone to understand that children are vulnerable to vehicular heatstroke and that all hot car deaths are preventable. Prevention tips:

- Never leave a child in a vehicle unattended for any amount of time.
- Make it a habit to check your entire vehicle before walking away.
- Always lock your vehicle so children cannot gain access.
- Ask child care providers to call if your child doesn't arrive when expected.
- Place a secured item in the front seat to remind you a child is in the back seat.

For more information, visit:

nhtsa.gov/heatstroke.



LEARN • PRACTICE • EXPLAIN—SOCIAL MEDIA SCENARIOS

With a partner, practice responding to the following scenarios.

- A friend posts a picture of her child in her car seat. You notice the harness straps are loose and the chest clip is too low.
- You notice a photo in a social media group where a young child is riding in a forward-facing car seat.
- A caregiver who knows that you are a CPS Technician asks for your feedback on the installation and use of a new car seat.
- A caregiver posts a picture in a social media group, generally asking for feedback on the installation and use of their car seat or booster seat.

A FEW WORDS ABOUT FEAR-BASED MESSAGING

In this course, you have learned about the increased risks to child passengers when car seats or booster seats are misused or not used at all. Avoid scaring a caregiver into changing their behavior concerning transportation of their children. Studies show that this type of approach is not effective, and results in very short-term behavior change.

A CPS Technician's response that focuses on fear or negativity often comes across as a judgment on the caregiver. If a caregiver feels judged, they may not engage with the CPS Technician.

STATEMENT	INSTEAD OF...	TRY...
"I am really excited about turning my one-year old forward-facing!"	"That is not a good idea. Your baby could suffer a fatal spinal injury. He could die!"	"May I share some information from the experts on when it's safe to turn them forward-facing? It might help you with your decision."
"I know I'm not supposed to use that dangle toy on her car seat handle, but it keeps her occupied. I'm more concerned about her harness height."	"That toy is a non-approved product and could really hurt your baby in a crash. You should not use it!"	"Using the toy must be really important to you. Let me explain why we are concerned with all aspects of safety for your child."

Putting It All Together

Throughout this training, you have learned about vehicle systems, car seats, and booster seats, as well as educating caregivers on best practice. Now it is time to apply your new skills.

As a reminder, CPS Technicians promote best practice but should be accepting of good, better, best caregiver choices.



TECH TIP

Discussion points concerning seating position selection include:

- Type of car seat or booster seat
- Seat belt system
- LATCH availability
- Air bag locations
- Other passenger seating needs
- Caregiver choice
- Car seat manufacturer recommendations
- Vehicle manufacturer recommendations

CPS Technicians should never support a caregiver in either breaking the law or going against manufacturer instructions. In cases where the caregiver does not make a safe choice, document the actions on your check form. Documentation on a form with a liability release should be standard practice.



ACTIVITY—IDENTIFY SEATING ARRANGEMENTS

Using the information provided below about each family member and the vehicle, write in where each person can sit safely and the appropriate car seat, booster seat, or seat belt system to use.

1. Driver (Caregiver #1)
2. Caregiver #2
3. Two-month-old, 11 pounds
4. Three-year-old, 30 pounds
5. Eight-year-old, 72 pounds

FRONT SEAT OF VEHICLE		
DRIVER SEAT Air bag • Lap-and-shoulder belt		Air bag • Lap-and-shoulder belt

BACK OF VEHICLE		
Lap-and-shoulder belt	Lap belt	Lap-and-shoulder belt

Conduct a Seat Check



THE SAMPLE
CAR SEAT
CHECK FORM
IS IN THE
APPENDIX.

LEARN • PRACTICE • EXPLAIN—CONDUCT A SEAT CHECK

Working with a team, practice conducting a seat check with a caregiver.

1. Assign roles within your team.
 - CPS Technician: Directly interacts with the caregiver.
 - Scribe: Records the findings and works with the caregiver to complete the sample check form.
 - Caregiver.
2. Complete the components of a seat check.
 - Introduce the team members.
 - Complete the check form.
 - Take the car seat or booster seat out of the vehicle and assess findings.
 - Identify and compliment correct use with the caregiver.
 - Identify and discuss any misuse with the caregiver.
 - Teach the caregiver how to properly install and use the car seat or booster seat.
3. Walk through the steps to conduct a seat check.
 - SELECTION: Did the caregiver choose an appropriate car seat for their child?
 - DIRECTION: Is the car seat facing the right way in the vehicle?
 - LOCATION: Is the car seat installed in an appropriate location in the vehicle?
 - HARNESSING: Are the harness straps placed and secured correctly on the child?
 - INSTALLATION: Is the car seat secured to the vehicle correctly?



Progress Check

1

What are four effective communication techniques to use when educating caregivers?

2

What are the main goals of a CPS Technician while working with a caregiver?

3

What should you do to better understand a caregiver's concerns and needs?

4

What are some factors that may influence caregiver behaviors at a seat check?

5

Name one thing you learned to incorporate during the practice seat check.

6

What should you do if a caregiver chooses not to make a safe choice?



REFERENCES

- 1 Hyunyi, C., & Salmon, C. T. (2006). Fear appeals for individuals in different stages of change: Intended and unintended effects and implications on public health campaigns. *Health Communication*, 20(1), 91-99. doi:10.1207/s15327027hc2001_9.

NOTES 

13

Using and Maintaining Your New Skills

MODULE OBJECTIVES



- IDENTIFY next steps to strengthen new CPS Technician skills.
- EXPLAIN the steps for recertification.
- PARTICIPATE in course checkup event.

You have learned about vehicle occupant protection systems, car seats, and how they work together to keep children safe. With this new knowledge and skills, how will you get involved in the Child Passenger Safety community? This module will help you develop a roadmap.

Next Steps: Be Active in Your Community

There are many ways to use your new skills by being active in your community. Start small with your outreach efforts as you strengthen your technical and communication skills.

- Encourage others to learn more about child passenger safety.
- Provide current, easy-to-read, culturally sensitive materials and information.
- Answer questions, keeping in mind good, better, best practice scenarios.
- Develop and provide community presentations.
- Participate in health and safety fairs.
- Attend as many local checkup events as possible to strengthen your skills.



Community outreach example

Next Steps: Build Skills

Since the National CPS Technician Certification Training is an introductory course, you are encouraged to continue to build both your technical and communication skills.

- Work within the scope of your training and the CPST Code of Conduct.
- Familiarize yourself with manufacturer resources to assist families.
- Improve your knowledge base by working with more skilled CPS Technicians.
- Complete continuing education (CEU) workshops and webinars to keep updated on changes in the field of child passenger safety.
- Continue to work on building positive communication skills by completing community education workshops and webinars.

TECH TIP

The CPST Code of Conduct found at cpsboard.org reminds you of the expected conduct and commitment for CPS Technicians.

Next Steps: Recertification Process

The certification cycle for both CPS Technicians and Instructors is two years. To retain your certification, you must complete the recertification process before your certification expires.

To recertify as a CPS Technician, you must complete the following.

- Instructor/Technician Proxy verified seat checks
- Community education
- Continuing education
- Pay the recertification fee. This may be done up to four months prior to your certification cycle end date.

Recertification information and program updates will be provided through the *CPS Express*, a newsletter emailed to all CPS Technicians and Instructors.

TECH TIP

Remember to keep your email address current in your National CPST Certification online profile at cert.safekids.org in order to receive recertification information and program updates.

Useful Tools for Recertification

Tools that may prove useful while you complete your recertification tasks include the following.

- Recertification Flow Chart
- CPST Recertification Personal Log
- Other useful tools: cert.safekids.org/resources-faqs/forms/recertification

Certification-Related Questions

Visit the following to find answers to many of your questions regarding the certification program.

- National CPST Certification at cert.safekids.org
 - I'm a Tech section
 - Frequently Asked Questions (FAQs) section
 - Policies and Procedures Manual

If you still cannot find the answer or require additional help, contact:

- Safe Kids CPS Certification Customer Service
 - **Call:** 877-366-8154 (available from 9 am to 7 pm ET weekdays)
 - **Email:** cps.certification@safekids.org

TECH TIP

You can earn and enter your recertification requirements at any time during your certification cycle in your National CPST Certification online profile. Remember to keep proof of attendance/completion for CEU sessions in case of an audit.

Next Steps: Organize an Inspection Station

Once you gain confidence in your technical and communication skills, you may want to help start an inspection station or organize a checkup event.

Refer to the CPS Inspections and Checkup Events document at cpsboard.org for information on the following topics.

- How to run a safe, quality inspection station or checkup event
- Resources and information on liability



Local checkup event example

The National Digital Car Seat Check Form (NDCF) is a check form for Technicians to use during check events. There is a paper version of this form found in the back of the TG if Technicians are not able to use the digital version. Use of other check forms is allowed as required by individual programs. Technicians should follow the requirements of the program they are working with.

Next Steps: Get Engaged!

Getting involved as quickly as possible within the next one to two months is essential to maintaining your newly acquired CPS skills. Develop an action plan to put your skills to work!

ACTION PLAN

REVIEW and FOLLOW UP

- ☐ **Review** Safe Kids Certification website.
cert.safekids.org
- ☐ **Review** National Child Passenger Safety Board website.
cpsboard.org
- ☐ **Review** Technician Guide.
cpsboard.org/tech-instructor-curriculum/
- ☐ **Update** my Safe Kids Certification online profile.
cert.safekids.org
- ☐ **Print** my National CPST Certification wallet card.
cert.safekids.org
- ☐ **Register** as a user of the National Digital Car Seat Check Form.
carseatcheckform.org

CONNECT

- ☐ **Obtain** contact information from my Instructors/classmates.
- ☐ **Write in** my State CPS Coordinator info:
- ☐ **Contact** State CPS Coordinator for help connecting with resources in my community.
nhtsa.gov/car-seats-and-booster-seats/training-contacts-state-child-passenger-safety
- ☐ **Identify** and contact organizer of local inspection stations or checkup events to notify of interest in helping.
nhtsa.gov/equipment/car-seats#inspection
- ☐ **Contact** local Safe Kids Coalition Coordinator for help connecting with resources in my community.
safekids.org/coalitions

CONTINUE EDUCATION

- ☐ **Participate** in a CPS CEU workshop or webinar.
- ☐ **Participate** in a community education workshop or webinar.

APPLY MY SKILLS

- ☐ **Attend** a checkup event.
 - Bring a copy of my National CPST Certification wallet card; ask to see the checklist in advance so I can familiarize myself with it.
- ☐ **Bookmark** local website to find future car seat checkup events.

How Far You've Come



LEARN • PRACTICE • EXPLAIN—REVIEW INSTALLATION VIDEO

Take a moment to review the video you recorded earlier in the training, when you did your first car seat installation.

Reflect on your progress, and share what you've learned.

Discuss the following questions with the group.

1. Now that you've learned and practiced the skills for proper car seat installation, what guidance would you give yourself, based on your video recording?
2. How do you rate your progress based on your video recording, and how you feel now?

Thank you for all that you do to help children travel safely! We appreciate you!



Appendix

Child Occupant Protection Glossary	A-2
Sample Check Form.....	A-11

Child Occupant Protection Glossary



#

3-in-1 Car Seat: Refer to All-in-One Car Seat.

4-in-1 Car Seat: Refer to All-in-One Car Seat.

5-in-1 Car Seat: Refer to All-in-One Car Seat.

A

AAP: American Academy of Pediatrics (aap.org)

Adjustable Foot: Refer to Recline Adjustment.

Advanced Air Bag: Air bag that uses a complex system of sensors and other technology to automatically adjust deployment in a crash, based on the front seat occupant; also referred to as smart air bag system

After-Market Product: Refer to Non-Approved Product.

Air Bag: Vehicle safety device made up of a flexible fabric envelope designed to rapidly deploy (inflate) when the vehicle determines that there has been a crash; designed to be used with a vehicle seat belt; vehicle manufacturers use many terms to refer to air bags including SRS—supplemental restraint system, SIR—supplemental inflatable restraint, SIPS—side impact protection system, SAB—side air bag, SABIC—side air bag inflatable curtain, and IC—inflatable curtain

All-in-One Car Seat: Car seat that can be used rear-facing, forward-facing and as a booster; may be referred to as 3-in-1, 4-in-1 or 5-in-1 car seat

ALR: Refer to Automatic Locking Retractor.

Anchor, Seat Belt: Metal component that attaches the seat belt to the vehicle structure

Angle Adjustment: Refer to Recline Adjustment.

Anti-Rebound Bar: Rigid bar found on some rear-facing car seats used to reduce the movement of the car seat towards the rear of the vehicle (rebound) in the event of a crash

Automatic Locking Retractor: Retractor on a seat belt that locks maintaining a fixed length of seat belt webbing; often referred to as ALR

B

Backless Booster Seat: Booster seat that uses the vehicle's seat back or head restraint for head, neck and back support for the child; may be referred to as low-back booster seat or no-back booster seat

Belt Path: Manufacturer-designated area on a car seat or booster seat where the seat belt or lower anchor connector webbing is routed to secure in the vehicle

Belt-Positioning Booster Seat: Refer to Booster Seat.

Belt Tensioner: Device found on car seats that aids installation by removing slack in the seat belt; also referred to as belt tensioning plate and tension doors

Best Practice: Safest way to transport a child based on the child's age, weight, height and developmental level; gold standard of protection, while following manufacturer instructions

Booster Seat: Seat that raises and positions the child so vehicle seat belts fits properly over the stronger points of a child's body, the hips and across the chest; must be used with lap-and-shoulder belt; may be high back or backless; also referred to as belt-positioning booster seat, BPB, no-back booster seat and low-back booster seat

BPB: Refer to Booster Seat.

Buckle: Locking mechanism of the vehicle seat belt or car seat harness; the latch plate fits into the buckle

Buckle Strap: Webbing strap with a buckle on one end found on car seats between the child's legs; may be adjustable; also referred to as crotch strap

Built-In Car Seat/Booster Seat: *Refer to Integrated Car Seat/Booster Seat.*



Car Safety Seat: *Refer to Car Seat.*

Car Seat: Crash-tested device specially designed to provide protection for an infant or child in the event of a motor vehicle crash; general term for rear-facing only, convertible, forward-facing only, and all-in-one car seats; may be referred to as child seat, child safety seat, car safety seat, child restraint or child restraint system

Caregiver: Person responsible for a child's well-being and safety

Carrier: Part of a rear-facing only car seat that connects to a detachable base; depending on the model may be used without the detachable base

Carrier Release: Mechanism that releases the carrier from the detachable base on a rear-facing only car seat; may be found on the carrier or the detachable base

Carry Handle: Plastic bar attached to rear-facing only seats used to carry the car seat; depending on the model, also may be used as an anti-rebound bar

Carry Handle Release Button: Mechanism that releases the carry handle on a rear-facing only car seat so it can be adjusted to different positions for carry and travel depending on the model

CDC: Centers for Disease Control and Prevention ([cdc.gov/injury](https://www.cdc.gov/injury) and [cdc.gov/motorvehiclesafety](https://www.cdc.gov/motorvehiclesafety))

Chest Clip: *Refer to Retainer Clip.*

Child Passenger Safety Technician: Person who has successfully completed the standardized National Child Passenger Safety Technician Certification Training course; also referred to as CPST, CPS Technician and Technician

Child Passenger Safety Technician Instructor: Person who has successfully completed the requirements to teach the National Child Passenger Safety Technician Certification Training course; also referred to as CPSTI, CPS Instructor or Instructor

Child Restraint/Child Restraint System: Crash-tested device or system that is specially designed to provide protection for an infant or a child in the event of a motor vehicle crash; general term for systems including car seats, booster seats, vests or car beds that meet FMVSS 213; referred to as CR or CRS

Child Seat/Child Safety Seat: *Refer to Car Seat.*

Combination Car Seat: Forward-facing only car seat that can be used with the harness forward-facing then with removal of the harness as a booster seat

Compartmentalization: Combination of energy-absorbent seat backs and narrow spacing on school buses that creates a compartment within which each occupant is confined in a front crash

Compliance Tests: Crash tests done on car seats and booster seats to confirm that manufacturers meet FMVSS 213 requirements; may be conducted by manufacturers, NHTSA or others

Convertible Car Seat: Car seat that can be used both rear-facing and forward-facing

CPS: Child Passenger Safety

CPS Instructor: *Refer to Child Passenger Safety Technician Instructor.*

CPS Technician: *Refer to Child Passenger Safety Technician.*

CPST: *Refer to Child Passenger Safety Technician.*

CPSTI: *Refer to Child Passenger Safety Technician Instructor.*

CR/CRS: Refer to Child Restraint/Child Restraint System.

Crash: Refer to Vehicle Crash.

Crash-Locking Latch Plate: Refer to Dynamic Latch Plate.

Crotch Strap: Refer to Buckle Strap.



Dead Zone: 12- to 18-inch space where an automatic locking retractor does not lock; may mislead into thinking the retractor does not have lockability

Deceleration: Act of slowing down; relates to both objects and people; a rapid deceleration can contribute to injury

Deploy: Inflate as in air bags

Design Standard: Regulation that mandates how the product should look, promoting continuity between manufacturers

Detachable Base: Separate car seat base that can be installed in the vehicle; typically found on rear-facing only car seats

Direct Routing Tether System: Tether system where the tether strap routes directly to a tether anchor without the use of a tether router

Dynamic Latch Plate: Non-locking latch plate found in newer vehicles; does not hold webbing at a fixed length; also referred to as crash-locking latch plate

Ease-of-Use Ratings: Set of ratings developed by NHTSA to evaluate how easy certain car seat features are to use based on the following categories: instructions, vehicle installation features, labels, and securing the child



ELR: Refer to Emergency Locking Retractor.

Emergency Locking Retractor: Retractor on a seat belt that locks in response to a sudden stop, acceleration, turn or crash; often referred to as ELR

Expiration Date: Date when a car seat or booster seat may no longer be used according to manufacturer directions; length of use varies by manufacturer and some manufacturers do not list an expiration date; if applicable, date may be found stamped in the shell, on a label or in the instruction manual



FAA Approval: Certification that the car seat meets the FMVSS 213 compliance test required for use on aircraft; noted on the car seat label as "This Restraint is Certified for Use in Motor Vehicles and Aircraft."

Federal Motor Vehicle Safety Standards:

Regulations that define minimum safety performance requirements for motor vehicles or items of motor vehicle equipment; often referred to as FMVSS

FMVSS: Refer to Federal Motor Vehicle Safety Standards.

FMVSS 208: Federal Motor Vehicle Safety Standard that regulates seat belts and frontal air bags

FMVSS 213: Federal Motor Vehicle Safety Standard that pertains to all child restraint systems intended for use as crash protection in vehicles for children up to 80 pounds

FMVSS 225: Federal Motor Vehicle Safety Standard that sets the design and performance standards of the LATCH in vehicles

Foam: Material added by the manufacturer between the plastic shell and fabric cover of a car seat or booster seat; rigid foam typically is used for added crash protection; softer foam typically is used for added comfort

Foot Prop: Support mechanism that extends from the base of a car seat to the vehicle floor; used to prevent or reduce excessive forward and downward rotation of the seat in a crash; also referred to as load leg

Footwell: Space for feet in front of vehicle seat

Forward-Facing: Car seat that is used facing the front of the vehicle

Forward-Facing Only Car Seat: Car seat designed for use by an older child in the forward-facing position only; does not have a rear-facing or booster seat mode

Frame: *Refer to Shell.*

Frontal Air Bag: Air bag that deploys from the dashboard or steering wheel; includes driver and passenger air bags

Frontal Crash: Crash at the front end of the vehicle; the most frequent type of crash



GHSA: Governors Highway Safety Association (ghsa.org)

Glove Box: Compartment built into the dashboard of a vehicle over the front seat passenger's footwell; used for miscellaneous storage; also referred to as glove compartment

Glove Compartment: *Refer to Glove Box.*

Good, Better, Best: Philosophy that guides Child Passenger Safety Technicians in understanding and respecting caregiver choices



Harness, 5-pt: Webbing straps that keep a child in the car seat and spread crash forces with five points of contact (one over each shoulder, one on each side of the pelvis, and one between the legs) with all five coming together at the buckle

Harness Adjuster: *Refer to Harness Adjuster Strap.*

Harness Adjuster Strap: Single piece of webbing used to tighten the harness on a car seat; also referred to as harness adjuster

Harness Release Button: Mechanism that releases the harness to allow the straps to be loosened on a car seat

Harness Retainer Clip: *Refer to Retainer Clip.*

Harness Slot: Place in a car seat where the harness is threaded through the shell

Head Rest: *Refer to Head Restraint.*

Head Restraint: Part of a vehicle seat that provides protection to the head and neck of a passenger, particularly in a rear-end crash; may be adjustable; also referred to as head rest

High Back Booster Seat: Booster seat with a shell that provides head, neck and back support for the child

Human Crash: Second stage of a vehicle crash when the occupants collide with parts of the vehicle interior, air bag and/or restraint webbing, if restrained



IIHS: Insurance Institute for Highway Safety (iihs.org)

Indirect Routing Tether System: Tether system where the tether strap first goes through a router that is directly behind the vehicle seat and then attaches to a tether anchor that is located elsewhere, often behind an adjacent vehicle seat; may be found in pickup trucks

Infant Car Seat: *Refer to Rear-Facing Only Car Seat.*

Inflatable Seat Belt: Seat belt with an air bag in the shoulder belt portion; found in rear seats of some newer vehicles

Insert: Additional accessory for car seats and booster seats provided by the manufacturer to aid positioning, fit and comfort; also referred to as pad

Inspection Station: Dedicated location staffed by Child Passenger Safety Technicians who are certified to teach parents and caregivers how to use their car seats

Instruction Manual Storage Location: Designated space, required by FMVSS 213, on car seats and booster seats to store the instruction manual

Instructor: *Refer to Child Passenger Safety Technician Instructor.*

Integrated Car Seat/Booster Seat: Car seat or booster seat built into the vehicle seat; also referred to as built-in car seat/booster seat

Internal Crash: Third stage of a vehicle crash; occurs after an occupant's body comes to a complete stop and the internal organs continue to move toward the point of impact

K

Knee Air Bag: Air bag that works in tandem with the other frontal air bags to control the position of the occupant and absorb energy in a crash; also reduces the risk for injuries to the knee, thigh and hip; located under the steering wheel or glove box

L

Labels: General use information, as required by FMVSS 213, affixed to the car seat or booster seat

Lap Belt: Seat belt anchored at two points for use across a vehicle occupant's thighs/hips; does not provide upper body protection

Lap-and-Shoulder Belt: Seat belt that is anchored at three points restraining the vehicle occupant at the hips and across the chest and shoulder; provides upper body protection

LATCH: Lower Anchors and Tethers for Children; vehicle attachment system dedicated to car seats

Latch Plate: Part of the buckle mechanism that connects the vehicle seat belt or car seat harness into the buckle

Lateral Crash: *Refer to Side Impact Crash.*

Learn, Practice, Explain: Guiding philosophy behind the National Child Passenger Safety Technician Certification Training promoting learning the facts/skills/information, practicing the facts/skills/information and explaining what you have learned to caregivers

Level Indicator: *Refer to Recline Indicator.*

Load Leg: *Refer to Foot Prop.*

Lock-Off: Built-in seat belt locking feature found on the shell of the car seat or the detachable base

Lockability Requirement: Requirement that all vehicles since model year 1996 have a locking feature in every passenger seat belt that can be used to install a car seat

Locking Clip: Metal piece that secures the seat belt at a fixed length in place of a locking latch plate that does not lock; used with car seat installation

Locking Latch Plate: Latch plate that holds the lap belt at a fixed length, after it has been adjusted

Low-Back Booster Seat: *Refer to Backless Booster Seat.*

Lower Anchors: Standardized pair of metal bars located near the vehicle seat bight used in conjunction with lower anchor connectors on a car seat

Lower Anchor Connector: Metal component used to secure the car seat or booster seat to lower anchors in the vehicle

M, N

Motor Vehicle Crash: *Refer to Vehicle Crash.*

National Child Passenger Safety Board: Group that maintains the quality and integrity of the national Child Passenger Safety Technician Certification Training curriculum; activities are managed by the National Safety Council (cpsboard.org and nsc.org); also referred to as NCPSB

National Highway Traffic Safety Administration:

Federal agency that is part of the Department of Transportation which promotes highway and transportation safety; developed original Child Passenger Safety Technician Certification Training curriculum and remains committed to providing regular updates to the curriculum; also referred to as NHTSA ([nhtsa.gov](https://www.nhtsa.gov))

NCPSB: *Refer to the National Child Passenger Safety Board.*

NHTSA: *Refer to the National Highway Traffic Safety Administration.*

No-Back Booster Seat: *Refer to Backless Booster Seat.*

Non-Approved Product: Product typically made and marketed by a third party that is not approved for use in a car seat by the car seat or vehicle manufacturer; commonly referred to as after-market product or non-regulated product

Non-Locking Latch Plate: Latch plate that does not have a locking feature to hold the webbing at a fixed length; includes sliding, dynamic and sewn-on vehicle latch plates

Non-Regulated Product: *Refer to Non-Approved Product.*

P

Pad: *Refer to Insert.*

Passenger Air Bag: Air bag that is in the right front part of the passenger compartment; typically it is larger than the driver air bag and may restrain either center or right front passengers occupants or both

Performance Standard: Regulation that mandates how a product should perform in a crash but does not mandate how a product should be designed or look in order to meet the standard

R

Rear-End Crash: Crash at the rear end of the vehicle; usually less severe than a frontal crash

Rear-Facing: Car seat that is used facing the rear of the vehicle; provides better head and neck protection, especially for infants and toddlers

Rear-Facing Only Car Seat: Car seat designed for use only by a young child in a semi-reclined rear-facing position; typically has a carrier and a detachable base; not permitted by manufacturer to be used forward-facing; also referred to as infant car seat

Rebound: Motion in the opposite direction after initial impact has occurred

Recalls: Voluntary or required actions taken by car seat and vehicle manufacturers to correct problems or deficiencies once products have been distributed or sold

Recline Adjuster: Mechanism that moves the recline adjustment

Recline Adjustment: Part of the car seat that moves to change the recline angle; can be found on both rear-facing and forward-facing car seats; may be referred to as adjustable foot and angle adjustment

Recline Indicator: Mechanism that identifies correct angle for use per manufacturer's instructions; also referred to as level indicator

Registration Card: Postage-paid return card, required by FMVSS 213, that comes with every new car seat; should be returned to the manufacturer so owners can be notified of safety issues, including recalls

Restraining Force: Equals weight of the occupant multiplied by the vehicle speed (approximately)

Retainer Clip: Plastic part that holds the harness shoulder straps on car seats together over the child's chest at armpit level; also referred to as chest clip and harness retainer clip

Retractor: Mechanism that gathers and stores extra seat belt webbing

Retrofit: Installing, fitting, or adapting a device or system not included in the original product; manufacturer's instructions must be followed; examples of this would be to add seat belts on a school bus or add a tether anchor in a passenger vehicle

Ride Down: Increasing the stopping time to reduce the crash forces on the body during a vehicle crash

Rollover Crash: Crash where the vehicle rolls over onto its side or upside down one or more times

Rotation: Crash where the vehicle spins

Router: Mechanism that guides the tether in pickup trucks when using the indirect routing tether system; may be closed loop or open system



Safe Kids Worldwide: Certifying body responsible for administering all aspects of the Child Passenger Safety Technician certification program (cert.safekids.org and safekids.org)

Safety Belt: *Refer to Seat Belt.*

Seat Belt: Buckle, retractor, anchor, webbing and latch plate system that restrains the occupant in the vehicle; also referred to as a seat belt system, safety belt, lap belt and lap-and-shoulder belt

Seat Belt Positioner: Non-approved device that is manufactured to alter the positioning of a lap and/or shoulder belt on a child

Seat Belt Syndrome: Injuries as a result of using only a lap belt or the lap portion of a lap-and-shoulder belt in a crash; typically include severe abdominal injuries and/or fractures of the lumbar (lower) spine

Seat Belt System: *Refer to Seat Belt.*

Seat Bight: Area where the vehicle seat cushion meets the vehicle seat back; also referred to as vehicle seat bight

Seat Cushion Air Bag: Air bag designed to raise the front portion of a seat cushion to help keep the occupant in the correct position during a frontal crash; typically found under the driver's and/or front passenger's seat

Seat Padding: Fabric that covers the shell/frame and foam, if present, of car seats and booster seats

Sewn-On Latch Plate: Non-locking latch plate; permanently stitched in place on the webbing

Shell: Molded plastic and/or metal structure of the car seat or booster seat; also referred to as frame

Shoulder Belt Guide/Positioner: Mechanism in a vehicle or on a booster seat where the vehicle shoulder belt is routed to help position the belt across the shoulder rather than across the neck; may be adjustable

Side Air Bag: Air bag that is designed to fill the space between the occupant and the door and/or window; may deploy in frontal, side impact, and rollover crashes; may be referred to as side impact air bag

Side Impact Air Bag: *Refer to Side Air Bag.*

Side Impact Crash: Crash into the side of a vehicle; usually the most severe/deadly type of crash; also referred to as lateral crash

Sliding Latch Plate: Non-locking latch plate; the seat belt webbing moves freely through the latch plate and does not lock at a fixed length

Smart Air Bag System: *Refer to Advanced Air Bag.*

Snug Harness: Harness straps that do not allow slack; the strap lies in a relatively straight line without sagging yet does not press into the child's shoulder creating an indentation

Splitter Plate: Metal component that connects the two ends of the shoulder harness to the harness adjuster strap on a car seat

Switchable Retractor: Retractor on a seat belt that usually functions as an emergency locking retractor and can be switched to function as an automatic locking retractor to secure a car seat

T

Technician: *Refer to Child Passenger Safety Technician.*

Tether: Piece of adjustable webbing (single or dual strap) with a tether connector on one end attached to the top of a car seat; attaches to a tether anchor in the vehicle on the other end to limit forward motion in a crash

Tether Anchor: Hardware in the vehicle that provides an approved location to attach a tether on a car seat

Tether Connector: Component attached to the end of the tether webbing used to secure the car seat to the tether anchor in the vehicle

V

Vault: Crash where the vehicle flips end over end

Vehicle Crash: First stage of a vehicle crash when the vehicle strikes another vehicle or object; also referred to as crash and motor vehicle crash

Vehicle Seat Bight: *Refer to Seat Bight.*

Vest: Harness system used in place of a car seat or booster seat either with the vehicle seat belt system or LATCH

W

Webbing: Fabric part of the vehicle seat belt or car seat harness

Whiplash: Injury to the neck usually caused by sudden whipping of the head backward during a rear impact collision

NOTES 

SAMPLE CAR SEAT CHECK FORM

FINDINGS ON ARRIVAL

12. CS History Known

☐ Yes ☐ No ☐ NCS

13. CS Involved in a Crash

☐ Yes ☐ No ☐ Unknown ☐ NCS

14. CS Secured Per MFG's Instructions

☐ Yes ☐ No ☐ NCS

15. CS Correct Direction Per MFG's Instructions

☐ Yes ☐ No ☐ NCS

16. CS Correct Direction Per State's Law

☐ Yes ☐ No ☐ NCS

17. CS Harness Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

***If no: check all that apply

- ☐ Twisted
- ☐ Too Loose
- ☐ Retainer Clip: Wrong Placement
- ☐ Harness Slot: Wrong Placement
- ☐ Crotch Buckle: Location/Routing
- ☐ Damaged
- ☐ Harness not used
- ☐ Harness Altered in Some Way
- ☐ Other:

18. Recline Angle Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

19. Lower Anchors Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

***If no: check all that apply

- ☐ Incorrect Use of the Vehicle Anchors
- ☐ Exceeds Weight Limit
- ☐ Twisted
- ☐ Routing (i.e. around crotch buckle/harness/belt path)
- ☐ Connector Orientation (i.e. upside down)
- ☐ Too Loose
- ☐ Used with a Seat Belt
- ☐ Other:

20. Tether Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

***If no: check all that apply

- ☐ Not Used
- ☐ Too Loose
- ☐ Routing
- ☐ Not Appropriate Tether Attachment (i.e. cargo tie down)
- ☐ Twisted
- ☐ Connector Orientation (i.e. upside down)
- ☐ Exceeds Weight Limit
- ☐ Other:

21. Seat Belt Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

***If no: Check all that apply

- ☐ Too Loose
- ☐ Retractor Not Locked
- ☐ Locking Clip
- ☐ Routing (i.e. around crotch buckle/harness/belt path)
- ☐ Used with Lower Anchor
- ☐ Child Fit (i.e. booster belt fit, behind the back, under the arm)
- ☐ Other:

22. Handle Position Correct

☐ Yes ☐ No ☐ NCS ☐ N/A

23. Are there non-regulated products?

☐ Yes ☐ No ☐ NCS

24. Is the load leg installed correctly per manufacturer's instructions?

☐ Yes ☐ No ☐ N/A ☐ NCS

TECHNICIAN DISCUSSED:

airbags • unused seat belts • projectiles
expiration date • premature transition
next steps • best practice vs. state law

ON DEPARTURE

25. Child/CS location in vehicle

- ☐ Other seat location
- ☐ Demonstration Seat
- ☐ Explain:
- ☐ front row
- ☐ back
- ☐ 3rd row

26. Child/CS Installed Using

(select all that apply)

- ☐ No CS
- ☐ Uninstalled
- ☐ Integrated Seat
- ☐ Unrestrained
- ☐ Seat Belt
- ☐ Tether
- ☐ Lower Anchor
- ☐ Other:

27. Is this the same CS as 'On Arrival'?

☐ Yes ☐ No

***If no: CS Donor

☐ Meets Eligibility Requirements

28. Was previous seat discarded?

☐ Yes ☐ No ☐ N/A

29. Was previous seat recycled?

☐ Yes, by caregiver. ☐ Yes, by technician. ☐ No ☐ N/A

30. Restraint type:

- ☐ RF Only without Base
- ☐ RF Only with Base
- ☐ Base Only
- ☐ RF Convertible
- ☐ FF with Harness
- ☐ Belt Positioning Booster
- ☐ Lap/Shoulder Seat Belt
- ☐ Lap Only Seat Belt
- ☐ Specialized Restraint
- ☐ Large Medical Seat
- ☐ Adaptive Booster
- ☐ Vest
- ☐ Other:

31. CS MFG:

32. Model Name:

33. Model Number:

34. MFG Date (MM/DD/YYYY):

/ /

35. Expiration Date (MM/DD/YYYY):

/ /

36. Is the CS registered?

☐ Yes ☐ No

37. Caregiver Donation

☐ Yes ☐ No Donation Amount

38. All corrections made prior to departure?

☐ Yes ☐ No

39. Is the CS compatible with the vehicle?

☐ Yes ☐ No ☐ N/A

40. Educational materials given?

☐ Yes ☐ No

CAREGIVER SIGN OFF

41. I harnessed a child/doll in a CS

☐ Yes ☐ No ☐ N/A

42. I participated in installing this CS today.

☐ Yes ☐ No ☐ N/A

43. Caregiver's initials

44. Final Inspection Sign-Off

Documentation Box:



Child Passenger Safety Technician Code of Conduct

The National Child Passenger Board has established the following code of conduct for Child Passenger Safety Technicians (hereafter Technicians) to guide their efforts to support the mission of protecting children in and around vehicles.

Technicians must adhere to the following:

- National Child Passenger Safety Technician Certification Training curriculum
- National Child Passenger Safety Technician certification program policies and procedures
- Car seat and vehicle manufacturers' instructions

Technicians must provide technically correct education in a respectful and professional manner to caregivers, whether in person or online. While educating and supporting families in their pursuit of safety, Technicians must:

- Be active listeners.
- Trust that caregivers want to do the best for children.
- Engage and empower caregivers.
- Respect decisions, keeping in mind the concept of good, better, best.

Technicians must educate caregivers that the best seat is one that:

- Fits the child's weight, height, age, and developmental levels.
- Fits the vehicle.
- The caregiver will use correctly per manufacturers' instructions each time.

Technicians may provide information to help caregivers select a seat, making certain that recommendations are based on the specific needs of the family and features of the seats that support those needs. Technicians must not make recommendations based solely on brand and/or personal preference.

Technicians must not discriminate based on race, color, religion, sex (including pregnancy, sexual orientation, or gender identity), national origin, disability, age, or socioeconomic status.

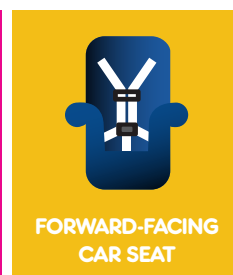
Adhering to the Code of Conduct maintains the quality of services provided by Technicians and applies to all verbal, non-verbal and written communication while interacting with colleagues and caregivers.

For more information and resources, visit cpsboard.org.

JUNE 2019

nhtsa.gov

cpsboard.org



cert.safekids.org

