Child Passenger Safety Technician

Certification Training



TECHNICIAN GUIDE

2024

NATIONAL Child Passenger Safety BOARD
an nsc managed program

Child Passenger Safety Technician Code of Conduct

The National Child Passenger Safety Board has established the following code of conduct for Child Passenger Safety Technicians (hereafter CPSTs) to guide their efforts to support the mission of protecting children in and around vehicles.

CPSTs must adhere to the following:

- Child Passenger Safety Technician Certification Training curriculum
- National Child Passenger Safety Certification Program policies and procedures
- Car seat and vehicle manufacturers' instructions

CPSTs 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, CPSTs 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.

CPSTs must educate caregivers that the best seat is one that:

- Fits the child's age, weight, height and developmental level.
- Fits the vehicle.
- The caregiver will use correctly per manufacturers' instructions each time.

CPSTs may provide information to help caregivers select a car seat or booster seat, making certain that recommendations are based on the specific needs of the family and features of car seats or booster seats that support those needs. CPSTs must not make recommendations based solely on brand and/or personal preference.

CPSTs 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 CPSTs and applies to all verbal, non-verbal and written communication while interacting with colleagues and caregivers.

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Key Learning Questions	Word Watch	Activity Worksheet	Group Activity
Learn • Practice • Educate Activity	Progress Check	Video List	Laws or Regulations
Key Point	Car Seat/Booster Seat Instruction Manual	Vehicle Owner's Manual	Key Dates
Resource Link	Note Section	QR Code (Link to Resources)	Canadian Note

1

Introduction

In this module, we will answer:



- What is the role of a Child Passenger Safety Technician?
- Who created the *Child Passenger Safety Technician Certification Training* curriculum, and what are the roles of the organizations involved?
- What are the goals of the *Child Passenger Safety Technician Certification Training*?
- What is the Learn, Practice, Educate model, and how is it used in the *Child Passenger Safety Technician Certification Training*?
- What are the completion requirements of the *Child Passenger Safety Technician Certification Training*?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the **Appendix** if needed.

- booster seat
- car seat
- caregiver
- child passenger safety
- Child Passenger Safety Technician (CPST)
- Learn, Practice, Educate (LPE)
- misuse
- motor vehicle crashes
- National Child Passenger Safety Board (NCPSB)
- National Highway Traffic Safety Administration (NHTSA)
- occupant protection
- Safe Kids Worldwide (SKW)
- seat belt
- Transport Canada (TC)

ABOUT THIS MODULE

Child Passenger Safety Technicians (CPSTs) are trained educators in the field of occupant protection. By understanding the correct use of vehicle occupant protection systems, car seats and booster seats, CPSTs educate others and provide resources on the safe transportation of children in motor vehicles.

Partnerships

The *Child Passenger Safety Technician Certification Training* is a standardized curriculum developed through a partnership of organizations.

The **National Highway Traffic Safety Administration** (NHTSA) developed the original curriculum and remains committed to providing regular updates assuring the technical accuracy of the CPST Certification Training curriculum used to teach CPSTs.

Transport Canada (TC) supported NHTSA's development of the original curriculum and posts the CPST Certification Training curriculum as a resource for Canadian child passenger safety training organizations.

The **National Safety Council** manages the **National Child Passenger Safety Board** (NCPSB), the body of experts that maintains the quality and integrity of the CPST Certification Training curriculum.

Safe Kids Worldwide (SKW) is the certifying body responsible for administering all aspects of the National Child Passenger Safety Certification program.

CPST Certification Training Purpose

WHY ARE WE HERE?

- When car seats, booster seats and seat belts are used correctly, the risk of injury, hospitalization and death for children is greatly reduced.

Key Statistics • United States[1]

Crashes and Injuries

- Motor vehicle crashes are a leading cause of death and injuries among children.[2]
- An average of 3 children were killed and an estimated 429 children were injured every day in motor vehicle crashes in 2022.[3]

Restraint Use

- In 2017, it is estimated that 325 lives of children 4 years old and younger were saved because of restraint use during a motor vehicle crash.[4]
- Car seats decrease the risk of a fatal injury by 71% among infants, and 54% among children 1 to 4 years old.[5]
- Using a booster seat decreases the risk of nonfatal injuries by 45% among children 4 to 8 years old when compared to using a seat belt alone.[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 the risk of injury or death.[7]
- In 2022, when the driver was buckled, children were restrained about 95% of the time.[8]
- In 2022, when the driver was unbuckled, children were restrained only about 71% of the time.[8]

Costs

- In 2019, the total economic cost of motor vehicle crashes in the United States was $340 billion.[9]

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1 The statistics presented are the most recent data available when this curriculum was released.

2 Centers for Disease Control and Prevention. WISQARS (Web-based Injury Statistics Query and Reporting System). Atlanta, GA: U.S. Department of Health and Human Services, CDC. Accessed November 10, 2023. **cdc.gov/injury/wisqars**

3 Traffic Safety Facts: Children. 2022 Data. **crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813575**

4 National Center for Statistics and Analysis. (March 2019). Lives Saved in 2017 by Restraint Use and Minimum-Drinking-Age Laws (Traffic Safety Facts Crash•Stats. Report No. DOT HS 812 683). Washington, DC: National Highway Traffic Safety Administration.

5 NHTSA Research Note, Revised Estimates of Child Restraint Effectiveness, December 1996. **crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/96855**

6 Arbogast KB, Jermakian JS, Kallan MJ, Durbin DR. Effectiveness of Belt Positioning Booster Seats: An Updated Assessment. *Pediatrics 2009; 124(5):*1281-1286. **pediatrics.aappublications.org/content/124/5/1281**

7 National Highway Traffic Safety Administration. Results of the National Child Restraint Use Special Study. (May 2015). DOT HS 812 157. 1200 New Jersey Avenue SE, Washington, DC 20590. **crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812142**

8 Boyle, L. Occupant Restraint Use in 2022: Results from the NOPUS Controlled Intersection Study. (November 2023). Report No. DOT HS 813 523. Washington, DC: National Highway Traffic Safety Administration. **crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813523**

9 Blincoe, L., Miller, T., Wang, J.-S., Swedler, D., Coughlin, T., Lawrence, B., Guo, F., Klauer, S., & Dingus, T. (February 2023). The Economic and Societal Impact of Motor Vehicle Crashes, 2019 (Revised) Report No. DOT HS 813 403. National Highway Traffic Safety Administration. **crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813403**

Key Statistics • Canada[10]

- On average, 1 child, 14 years old and younger, is killed every 8 days and an estimated 14 are injured every day in motor vehicle crashes.
- When the driver is buckled, children are restrained about 98% of the time.
- When the driver is unbuckled, children are restrained only about 68% of the time.



[10] The statistics presented are compiled from 2021 data. Transport Canada National Collision Database Online, wwwapps2.tc.gc.ca/saf-sec-sur/7/ncdb-bndc/p.aspx?l=en

CPST CERTIFICATION TRAINING GOALS

The goals of this training are to:

1. Provide a foundation of technical knowledge about the correct use of car seats, booster seats and seat belts.
2. Create opportunities to develop and practice effective communication skills for educating caregivers on the safe transportation of children in motor vehicles.

THE LEARN • PRACTICE • EDUCATE MODEL

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



LEARN
the knowledge and skills.



PRACTICE
the knowledge and skills.



EDUCATE
others on the knowledge and skills.

TECH TIP

Learn, Practice, Educate (LPE) activities are incorporated throughout this curriculum for practicing your new knowledge and skills.

Practice helps retrieve newly learned information from the brain. Retrieval builds strong brain connections to new information.[11]

[11] Evidence shows that retrieval practice is especially effective at increasing longer-term retention and generally outperforms more common strategies such as repeated studying or even more elaborate ones like concept mapping (McDermott, 2021; Karpicke & Blunt, 2011; Roediger & Karpicke, 2006). ctl.wustl.edu/resources/using-retrieval-practice-to-increase-student-learning/

COMPLETION REQUIREMENTS

To become certified as a Child Passenger Safety Technician, you must complete the following:

IN-PERSON DELIVERY OPTION

Attend the entire training.

HYBRID DELIVERY OPTION

Complete 100% of the online learning modules.[12]

Attend all virtual in-person sessions.

Attend all in-person sessions.

AND



Participate in class discussions.



Participate in practice activities.



Pass three quizzes.
(with a minimum of 42 of 50 questions answered correctly).[13,14]



Pass four skills evaluations.[13,14]

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[12] Online learning modules must be completed to 100% prior to the first in-person session.

[13] Retakes of the quizzes or skills evaluations are not allowed.

[14] If accommodations are needed for the quizzes and/or skills evaluations, please speak to an Instructor as soon as possible to discuss options available to you.



In Canada, training, certification and recertification of CPSTs are the responsibility of each training organization. Potential CPSTs are encouraged to contact their local training organization to understand their specific certification processes.

Disclaimer

While the National Highway Traffic Safety Administration (NHTSA), an operating administration of the U.S. Department of Transportation (DOT), and Transport Canada update 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, the U.S. DOT or Transport Canada. The United States Government and the Government of Canada assume no liability for their 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 and the Government of Canada do not endorse products or manufacturers.



MODULE VIDEOS

- Welcome Video
- Safe Kids Video
- Locate Curriculum Resources





Progress Check

1 **What is the role of a Child Passenger Safety Technician (CPST)?**

TG PAGE(S) ↓

2 **What are the two goals of the *CPST Certification Training*?**

TG PAGE(S) ↓

3 **What is the Learn, Practice, Educate model?**

TG PAGE(S) ↓

4 **Why is the Learn, Practice, Educate model important?**

TG PAGE(S) ↓

2

Communicating and Educating

In this module, we will answer:



- What is best practice?
- How does Good, Better, Best relate to caregiver choices about transporting children in their care?
- What factors influence the choices caregivers make?
- What are some effective techniques for communicating with caregivers?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

best practice

Good, Better, Best

National Digital Car Seat Check Form (NDCF)

ABOUT THIS MODULE

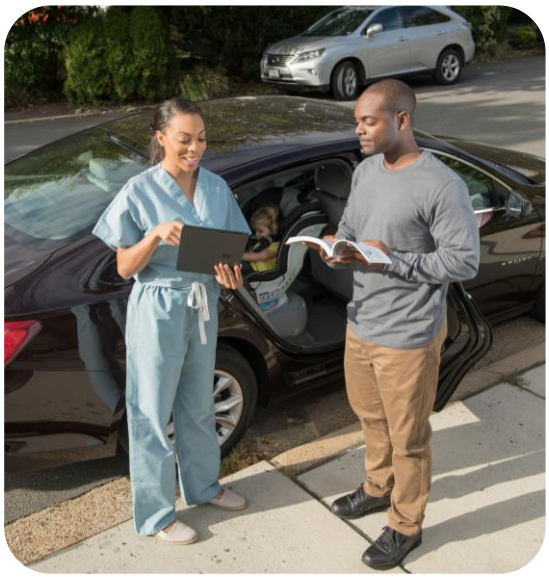
Child Passenger Safety Technicians come from a wide variety of backgrounds but they have one thing in common—the goal of keeping children safe in motor vehicles. CPSTs focus on educating caregivers in a positive and supportive manner.

Best Practice

- Best practice is the gold standard of protection.
- CPSTs explain best practices to caregivers so they can make educated choices.

Caregiver Choices

- Caregivers make the final decision about how to transport children in their care.
- Caregivers may choose to follow best practices.
- At other times, caregivers may make choices that do not follow best practices.
- As a CPST, it is your responsibility to respect caregiver choices.





As a CPST, you will explain best practices to caregivers.



GOOD, BETTER, BEST

Caregiver choices can fall into Good, Better, Best categories.



- Good represents an acceptable choice or practice.



- Better represents a choice or practice better than good but not best practice.



- Best represents the most favorable choice or practice.

Example

Consider the following maps from the Good, Better, Best perspective. All the maps will guide you to where you are going—the difference is how accurately and how safely.

★ GOOD	★★ BETTER	★★★ BEST
Hand-drawn map	*Published road map*	*GPS*
		
▪ Details may be missing. ▪ No traffic or safety information is included. ▪ May not guide you to an exact destination.	▪ More details are provided but they may be outdated. ▪ No traffic or safety information is included. ▪ May not guide you to an exact destination.	▪ Very detailed and up-to-date information is provided. ▪ Can warn of traffic, hazards and road closures. ▪ Will guide you to an exact destination.

Successful Interactions

The goal for each interaction is for the caregiver to leave better educated and feeling confident in their new knowledge and skills.

To accomplish this goal, CPSTs should:



- Engage the caregiver in the education process from beginning to end.
  - Just as you will be taught using the Learn, Practice, Educate model, you should educate caregivers using the same approach.
  - Plan to demonstrate and then ask the caregiver to repeat the process while explaining what they are doing.
- Adjust teaching methods based on caregivers and their needs.
  - Provide caregivers as much hands-on participation in the process as possible to inspire confidence in their ability to use their car seat or booster seat correctly.
- Promote best practices, but also accept good or better choices.



FACTORS INFLUENCING CAREGIVER BEHAVIOR AND CHOICES

Caregivers are motivated by many factors including practices, beliefs, experiences, circumstances, anxiety, stress and socio-economic challenges. These factors may affect how open caregivers are to education and the choices they make.



Consider factors that may be influencing the caregiver's mood or attitude.

- Is the caregiver required to attend the event?
- Did the caregiver arrive late to the appointment?
- Did the caregiver understand how much time is involved in a car seat check?
- Does the caregiver appear to feel stressed or anxious, perhaps about being judged?
- Is the caregiver concerned about sharing personal information?
- Is the caregiver distracted?
- Is the caregiver having difficulty understanding due to a learning disability?
- Is the child having a hard time cooperating, perhaps because they are tired, hungry or have unmet needs?

Consider factors that might be influencing the caregiver's choices.

- Do they face socio-economic challenges?
- Are there beliefs that could affect the caregiver's knowledge or attitude about child passenger safety?



UNDERSTANDING CAREGIVER CONCERNS

- By actively listening, CPSTs can understand the reason for the caregivers' question.
  - Sometimes caregivers ask a question about one thing but, with more questioning, you discover they really want help or information about something else.
  - Ask follow-up questions to determine a caregiver's concerns or needs.

Examples

When they ask…	They may really mean…
"Which car seat is escape-proof?"	My child is getting out of their car seat while the car is moving.
"Is it really safer for my child to face the back of the car?"	I do not feel comfortable not being able to see my child.
"Does my baby really need to be in the back seat next to her brother?"	My son may bother or poke her, causing a disruption in the car.
"Can I move my child to a seat belt yet?"	All my child's friends are using the seat belt, not a booster seat.





Effective Communication Techniques

Every interaction with a caregiver will be unique. The following are some communication techniques that will help to engage the caregiver.

PRINCIPLE	WHAT IT MEANS	EXAMPLE
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.	**CPS means "child passenger safety" to some and "child protective services" to others. Share with the caregiver that you will be discussing car seat safety rather than using the term CPS.**
KEEP IT SHORT 	▪ It is quite difficult for caregivers to learn everything about child passenger safety all at once. ▪ People tend to learn more effectively when information is delivered in chunks.	**Focus on the key messages that address immediate needs.** **Provide the caregiver with additional resources to look over later.**
KEEP IT POSITIVE 	▪ Keep in mind your tone of voice, non-verbal cues and body language. ▪ Be positive and encouraging.	**Thank the caregiver for attending the car seat check.** **Praise what the caregiver has done correctly.**
KEEP IT REAL 	▪ Research shows that it is often easier for learners to remember new information if it ties to real world situations.	**Encourage the caregiver to make another appointment when it is time for the next step.**



Did you know people retain less than 40% of what they learned just nine hours later?[1] Some caregivers may benefit from recording a video as you educate them about child passenger safety.

AVOID FEAR-BASED MESSAGING

- An approach 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 you.
- At best, fear-based messaging results in very short-term behavior change.

STATEMENT	INSTEAD OF…	TRY…
"I am really excited about turning my 1-year-old forward-facing!"	"That is not a good idea. Your baby could suffer a spinal injury and die."	"May I share some information from the experts on when it is safe to turn children forward-facing? It might help you with your decision."
"I know I am not supposed to use that dangle toy on the car seat handle, but it keeps my baby occupied."	"That toy is a non-approved product and could really hurt your baby in a crash. You should not use it!"	"I understand keeping your baby happy and entertained in the car is difficult and can be distracting while driving. Let me explain why you might want to consider limiting the use of dangle toys in your vehicle."

[1] Brain Science: Overcoming the Forgetting Curve by Art Kohn for The Learning Guild, April 10, 2014. learningguild.com/articles/1400/brain-science-overcoming-the-forgetting-curve/

CPST Code of Conduct – United States

The National Child Passenger Safety Board has established a code of conduct that U.S. CPSTs must follow. This code guides their efforts to support the mission of protecting children in and around motor vehicles.

Find the *CPST Code of Conduct* on the inside front cover of the Technician Guide and at **cpsboard.org/curriculum-resources**.

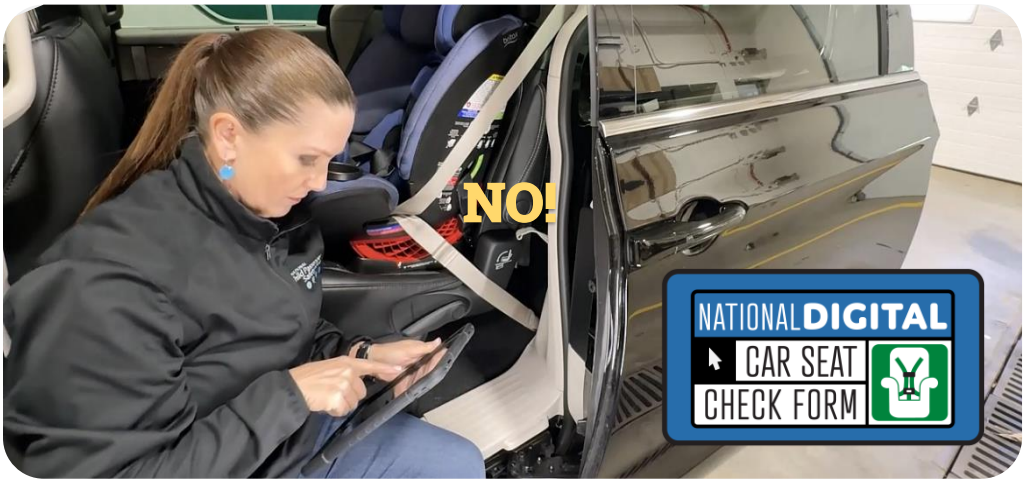
In Canada, training and certification of CPSTs are the responsibility of each training organization. Transport Canada recommends each training organization establish their own code of conduct.

Documentation

Documentation is standard practice when conducting car seat checks.

All the knowledge and skills you learn in this training can be applied to completing the National Digital Car Seat Check Form (NDCF). We will use Check Form Check activities to practice documentation.

While some organizations opt to use different car seat check forms, all check forms have similar input fields. Learning how to use the NDCF can be helpful to using other check forms as well.



National Digital Car Seat Check Form

The National Digital Car Seat Check Form (NDCF) is highlighted in this training as a resource that is uniquely designed to collect, store and process car seat check data using a standardized electronic system. The data collected can be useful to CPSTs, program leaders, state and regional coordinators, car seat and vehicle manufacturers, and others to analyze programming efforts and advance the field of child passenger safety.

- The NDCF is a free resource available to CPSTs currently certified through the U.S. certification system.
- The NDCF is used for documenting car seat checks. The NDCF records how a car seat was used upon arrival, details changes that were made during the check and how the car seat was used at departure.
- NDCF data is available in local, state and national dashboards that share information useful for many purposes, including identification of patterns of use and misuse that can help reduce child passenger injuries and deaths.
- Available platforms include desktop, app and paper form.
  - NDCF paper check forms can be used to document car seat check information which is then entered later into the electronic system.

Visit cpsboard.org/ndcf for more information.

Please contact your local training organization to inquire about their specific data collection program and check form options.

Activity—National Digital Car Seat Check Form

1. Take a moment to review the NDCF. Based on what you see, what are the activities of the CPST during a car seat check?

2. Imagine yourself using the NDCF. What terms will you need to learn first?

Progress Check

1 What is best practice?

TG PAGE(S)

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

TG PAGE(S)

3 What factors may influence caregiver choices and behavior?

TG PAGE(S)

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

TG PAGE(S)

MODULE VIDEOS

- Communication Tips—Technicians in the Field

3

Crash Protection

In this module, we will answer:



- What is the most important thing that a caregiver can do to prevent a child in their care from being injured in a crash?
- What are the three stages of a motor vehicle crash?
- What are five ways car seats, booster seats and seat belts save lives?



WORD WATCH

The following terms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

5-point harness
air bag
crumple zone
forward-facing
frontal crash
human crash
internal crash
lap-and-shoulder belt
rear-end crash
rear-facing
restraint system
ride down
rollover crash
rotational crash
side impact crash
vault crash
vehicle crash
webbing

ABOUT THIS MODULE

One way to understand how car seats, booster seats and seat belts help save lives is to look at what happens during a motor vehicle crash.

Preventing Injury in Motor Vehicle Crashes

Correctly using restraint systems—car seats, booster seats and seat belts—is the most important thing caregivers can do to prevent or reduce injury in a motor vehicle crash.

- Restraint systems play a major role in reducing the severity of injury to occupants involved in a crash.
- Even in the very rare chance of a vehicle catching fire or landing in the water, a correctly restrained occupant is more likely to be conscious, uninjured and able to exit the vehicle.

TECH TIP

Caregivers may mistakenly believe that they can restrain a child in a motor vehicle crash by holding them in their arms.

The forces involved in a crash are much greater than most people realize.





Stages of a Crash

Every crash includes three stages.

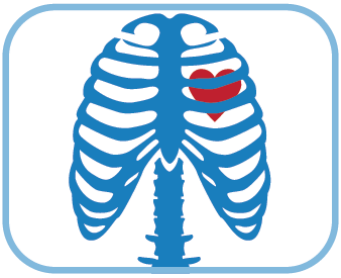
Stage 1: The vehicle crash



Stage 2: The human crash



Stage 3: The internal crash



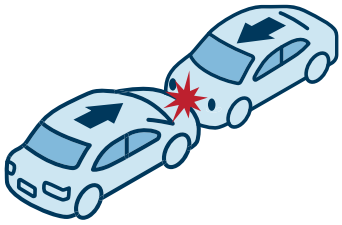
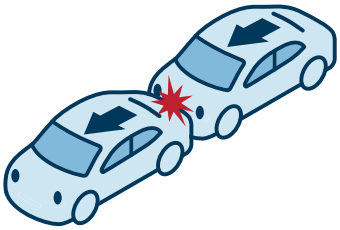
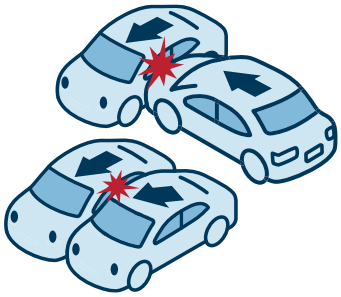
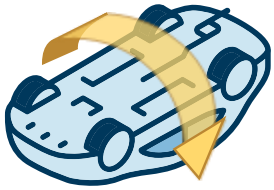
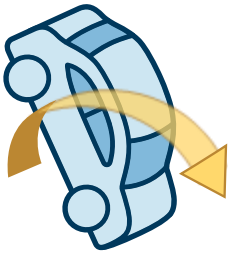
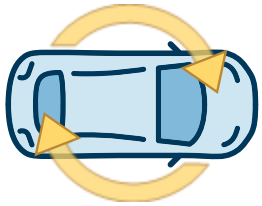
Stage 1 • Vehicle Crash



The first crash occurs when the vehicle strikes another vehicle or object.

The vehicle body crushes and deforms while rapidly reducing in speed and coming to a stop.

Types of Vehicle Crashes

Frontal 	**Rear-End** 	**Side Impact** 
Rollover 	**Vault** 	**Rotational** 

Stage 2 • Human Crash

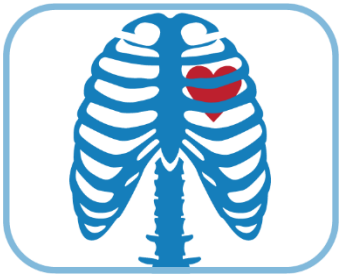


As the vehicle comes to a stop, the occupant continues to move toward the point of impact at the vehicle's pre-crash speed.

The second crash occurs as the occupant's body collides with parts of the vehicle interior, air bags and/or the restraint webbing if restrained.

- Unrestrained occupants will experience a more severe human crash and may be thrown from the vehicle.
- Unrestrained occupants can also collide with other occupants likely causing significant injuries to them.

Stage 3 • Internal Crash



As the occupant comes to a stop, the occupant's internal organs continue to move toward the point of impact.

The third crash occurs as the internal organs collide with other organs or bone, often causing internal bleeding and/or organ damage.[1]

TECH TIP

In addition to restraint use, many factors determine outcomes in a crash including vehicle size, speed and point of impact.

Some crashes are so severe that even correctly restrained occupants are injured or killed.

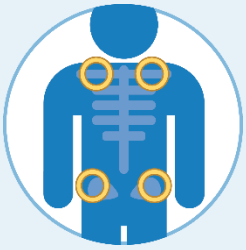
[1] Insurance Institute for Highway Safety, Arlington, Virginia USA. "Understanding Car Crashes: When Physics Meets Biology." YouTube, 4 Feb. 2014. youtube.com/watch?v=hi2FEyV2Z2E

Ways Restraint Systems Prevent Injury

Car seats, booster seats and seat belts help prevent or reduce injury in five ways:



1. Keep occupants in the vehicle.



2. Direct crash forces to the strongest parts of the body—the hips and shoulders.



3. Spread crash forces over a wide area of the body, putting less pressure on any one part.

   A rear-facing car seat spreads the crash forces across a child's body and the back of the car seat, cradling the child's head, neck and back.

   The 5-point harness of a forward-facing car seat spreads the crash forces across the strongest parts of a child's body.

   A lap-and-shoulder belt spreads the crash forces across the strongest parts of the body of older children and adults.



4. Protect the brain and spinal cord by keeping the head and upper body away from interior surfaces of the vehicle.



5. Help the occupants ride down crash forces.

TECH TIP

Any occupant or object that is not restrained during a crash may collide with other occupants possibly causing serious or fatal injuries.



Four-year-old correctly restrained



Eight-year-old correctly restrained

RIDE DOWN

Occupants can be injured or killed when they experience a sudden stop in a crash, which transfers high crash forces to the body.

To prevent or reduce injury, occupant protection methods are used to increase the stopping time and reduce the crash forces on the body. This helps the occupant “ride down” the crash.



Teen correctly restrained

- During the vehicle crash, crumple zones, which are made to absorb crash forces, help to extend the time it takes for the vehicle to stop. This decreases the amount of crash forces the occupant may experience.
- During the human and internal crashes, car seats, booster seats and seat belts extend the time it takes for the occupant to slow down, reducing the crash forces on the body.
- Correctly used restraint systems will improve ride down benefits.
- When restraints are too loose or not used, the body keeps moving during a crash and then stops abruptly. Although the difference in stopping time between a restrained and unrestrained occupant is a fraction of a second, the added ride down time greatly improves the restrained occupant’s crash outcome.

Explaining Ride Down

A good way to understand ride down is to think about how to catch an egg without breaking it.

- You must increase the stopping time by slowing the egg's speed with your hand and arm movement until the energy is dissipated.
- If you stop the egg abruptly, it will likely break.



Activity—Install a Car Seat

- Work in teams of two.
- Using your current knowledge, take turns installing a car seat.
- Record each installation.
  - Each video should be less than five minutes.
- Keep your video until the end of the training.
  - We will revisit the videos during the final module.

MODULE VIDEOS

- Three Stages of a Crash
- Understanding Ride Down

Progress Check

1 **What is the most important thing caregivers can do to prevent a child in their care from being injured in a crash?**

TG PAGE(S) ↓

2 **What are the three stages of every crash?**

TG PAGE(S) ↓

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

TG PAGE(S) ↓

4

Seat Belt Systems

In this module, we will answer:



- What are the different types of seat belt systems?
- What are the main parts of seat belts and the function of each part?
- What is the lockability requirement related to seat belt systems?
- How do you test seat belts for lockability?
- What is a locking clip and when is it used?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

anchor
automatic locking retractor (ALR)
belt path
buckle
Canadian Motor Vehicle Safety Standards (CMVSS)
dynamic latch plate
emergency locking retractor (ELR)
Federal Motor Vehicle Safety Standards (FMVSS)
inflatable seat belt
lap belt
latch plate
lockability requirement
locking clip
locking latch plate
locking retractor
non-locking latch plate
non-locking retractor
rear seat
retractor
sewn-on latch plate
sliding latch plate

ABOUT THIS MODULE

All seat belts used for car seat installations must be locked so the lap belt remains at a fixed length. One of your most critical tasks as a CPST will be to educate caregivers on how to lock the seat belt when installing a car seat. To do so, you must be comfortable identifying what locks the seat belt.

Federal Standards for Seat Belts

Federal standards set minimum safety requirements for motor vehicles and motor vehicle equipment including seat belts and other safety features.

- In the United States, NHTSA sets the Federal Motor Vehicle Safety Standards (FMVSS).



In Canada Transport Canada sets the Canadian Motor Vehicle Safety Standards (CMVSS).

- Standards regulate various aspects of seat belts, such as their strength, how they attach or anchor to the vehicle and how they lock.

TECH TIP

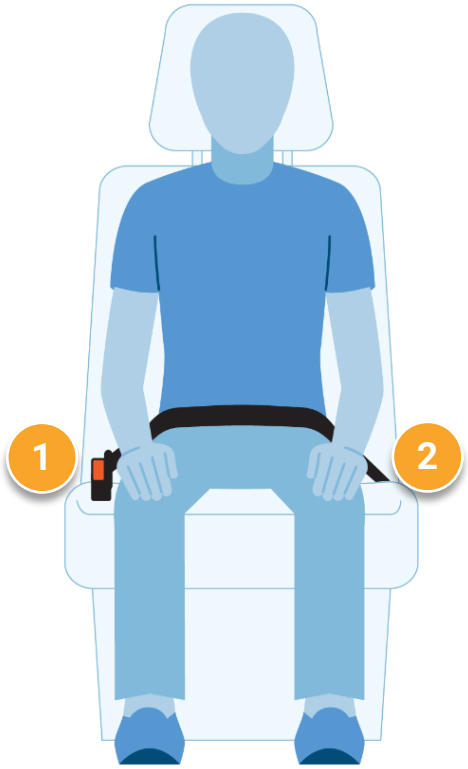
For more information on Federal standards in the United States and Canada, visit cpsboard.org/curriculum-resources.

Types of Seat Belt Systems

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

LAP BELT

- A lap belt anchors to the vehicle at two places.
- A lap belt crosses an occupant's lap providing lower body restraint. A lap belt does not provide upper body restraint.



LAP-AND-SHOULDER BELT

- A lap-and-shoulder belt anchors to the vehicle at three places.
- A lap-and-shoulder belt crosses an occupant's lap and one shoulder providing both lower and upper body restraint.



Seat Belt Parts

Seat belts have five main parts that work together to provide protection in a motor vehicle crash.



Webbing is the woven fabric part of a seat belt.

The **retractor** is the mechanism that gathers and stores unused seat belt webbing. All retractors lock the seat belt in a crash. Retractors are usually located inside a vehicle seat or behind a trim panel, like the one pictured, and are not visible.

Anchors are the points where a seat belt attaches to strong locations in the vehicle or on the vehicle seat.

The **latch plate** is the hardware that connects the seat belt webbing to a buckle in the vehicle.

The **buckle** is the hardware that accepts the latch plate and holds the seat belt in place.

Lockability Requirement

Correct installation of a car seat using a seat belt requires the lap belt to remain locked at a fixed length at all times.

- Federal standards require there to be a way to keep seat belts locked at a fixed length to hold a car seat tightly during normal driving conditions.
  - This is called the lockability requirement.
- The only seat belt systems that do not have to meet the lockability requirement are those for the driver since car seats are not installed in this seating position.
- The locking feature of a seat belt is most commonly found in the retractor but may also be found in the latch plate.



Since model year 1996, Federal standards in the United States have required all passenger seat belt systems to lock to secure car seats.



Canada introduced the lockability requirement beginning in model year 2015.

TECH TIP

Remember—if you are working with a vehicle made before model year 1996 (U.S.) or model year 2015 (Canada), seat belt lockability was not required, and an additional step may be needed to lock the seat belt.



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

Types of Retractors

To restrain an occupant, all retractors lock a seat belt during an emergency—including a sudden stop, acceleration, turn or crash.

- In addition, the retractors for passenger seating positions in most vehicles provide a locking feature needed to secure a car seat, meeting the lockability requirement.
  - This locking feature is made specifically to install a car seat and is referred to as a locking retractor.
- Retractors that do not have this locking feature are referred to as non-locking retractors.



Seat belt retractor

NON-LOCKING RETRACTOR

- A non-locking retractor—or emergency locking retractor (ELR)—is typically found in the driver seating position but also may be found in other seating positions.
- This retractor only locks during an emergency. It does not keep the seat belt at a fixed length during normal driving conditions as needed for car seat installation.

LOCKING RETRACTOR

- The most common type of retractor is a switchable retractor.
- A switchable retractor switches between a non-locking retractor and a locking retractor—or automatic locking retractor (ALR).
- A switchable retractor can be locked to hold the seat belt at a fixed length to secure a car seat after you activate the locking feature.

Most lap-and-shoulder belts have only one retractor. Less often, lap-and-shoulder belts have two retractors—one for the lap belt and one for the shoulder belt.

ACTIVATING A LOCKING RETRACTOR

To activate the locking feature, slowly and gently pull out all the shoulder belt webbing.

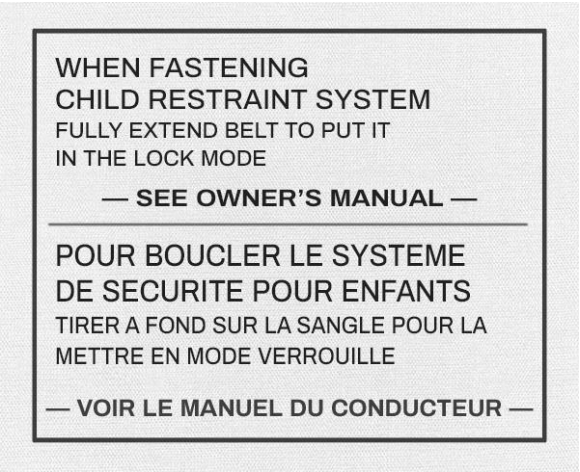


Pull out the shoulder belt webbing slowly and gently.

- Once the webbing has been entirely pulled out of the retractor, the locking feature is activated and the retractor is in the locking mode.
- While in the locking mode, you will be able to shorten the seat belt, but you cannot pull more webbing out of the retractor to lengthen it.
  - This allows the seat belt to be shortened to achieve a tight car seat installation that will not loosen under normal driving conditions.
- You may hear a clicking sound as you release webbing back into the retractor.
- To reset the seat belt, unbuckle the seat belt and let the webbing go fully back into the retractor.
  - The retractor will reset to the non-locking mode.

Although rare today, some vehicles have a locking retractor—or ALR—that will automatically switch to the locked mode after pulling out only a small segment of the seat belt webbing, approximately 12–18 inches (30.5–45.75 cm). The ALR type of locking retractor is typically found in model year 1995 and older vehicles.

Check the seat belt for a label. It may contain information about the type of retractor.



Label for locking retractor

TECH TIP

A child who plays with a seat belt may become entangled if it is wrapped around their head, neck or body. In some situations, the seat belt may need to be cut to release the child. If a child is within reach of an unused seat belt, check the vehicle owner's manual to see how it may be stored out of the child's reach. If you do not find information in the vehicle owner's manual, buckle and lock the seat belt at a fixed length to keep it out of a child's reach.



NO RETRACTOR

- Some older vehicles, typically model year 2007 and older, are equipped with lap belts in the front center or rear seating positions.
  - As of model year 2008, Federal standards phased out lap belts in rear seating positions.
  - Although rare, lap belts may still be found in front center seating positions of vehicles.
- These lap belts may not have a retractor to store unused seat belt webbing leaving the excess webbing visible.
  - Lap belts without a retractor must have a latch plate that provides the locking feature necessary to restrain occupants and secure a car seat.



Lap belt without a retractor

Test for Retractor Lockability

Use the following steps to confirm if a retractor has the lockability feature needed to secure a car seat.

RETRACTOR

STEP 1 Slowly and gently pull all the webbing out of the retractor. Do not pull the webbing out quickly as this could engage the emergency locking feature and prevent you from pulling the webbing out fully.

STEP 2 Slowly release a few inches of webbing into the retractor. Listen for a clicking sound.

STEP 3 While still holding the webbing, gently try to pull the webbing back out again.

NON-LOCKING RETRACTOR

The retractor allows you to pull webbing back out. You do not hear a clicking sound when releasing the webbing back into the retractor. You have a non-locking retractor.

FURTHER LOCKABILITY CHECKS ARE NEEDED

LOCKING RETRACTOR

The retractor does not allow you to pull webbing back out. You may hear a clicking sound when releasing the webbing back into the retractor. You have a locking retractor you may use to install a car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED



If the seat belt system has two retractors, test the retractor on the lap belt.



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



LEARN • PRACTICE • EDUCATE—RETRACTORS

Practice educating a caregiver on how to switch a locking retractor from the non-locking mode to the locking mode and back to the non-locking mode.



Progress Check

1 What are the five main parts of a seat belt and the function of each part?

TG PAGE(S) ↓

2 In what vehicle model year did the lockability requirement go into effect?

TG PAGE(S) ↓

3 How can a locking retractor's locking feature be activated?

TG PAGE(S) ↓

4 What are the three steps to test for retractor lockability?

TG PAGE(S) ↓

Types of Latch Plates

The latch plate may also contain the seat belt's locking feature, although more commonly the locking feature is found in the retractor.



- If you have tested the retractor and found that it does not lock, the next step is to test the latch plate to see if it will lock the seat belt.
- As with retractors, there are non-locking latch plates and locking latch plates.

TECH TIP

Read the vehicle owner's manual to learn how to use seat belts with car seats. The presence of moving parts on a latch plate does not guarantee it is a locking latch plate. Test the retractor first. If the retractor is a locking retractor, the latch plate is unlikely to lock.

NON-LOCKING LATCH PLATES

A non-locking latch plate has no locking feature to lock a seat belt at a fixed length for securing a car seat.

- Types of non-locking latch plates are:
  - Sliding
  - Dynamic
  - Sewn-on

Sliding Latch Plate

- Sliding latch plates are found only on lap-and-shoulder belts.
- A sliding latch plate is a single piece with no moving parts.
- The seat belt webbing moves freely through a slot or slots in the latch plate and will not lock at a fixed length.

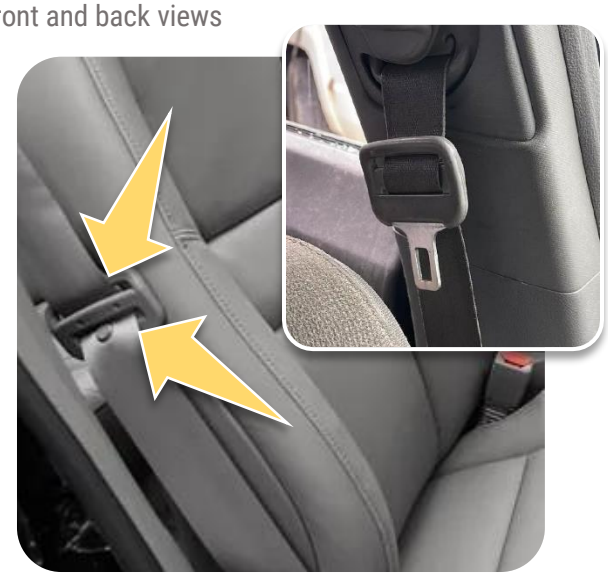
Sliding Latch Plate Examples



Sliding latch plate, front and back views



Sliding latch plate with one slot



Sliding latch plate with two slots, front and back views

Dynamic Latch Plate

Dynamic latch plates are found on lap-and-shoulder belts in some vehicles since model year 2010.

- A dynamic latch plate has a bar that rotates to pinch the lap belt and shoulder belt together.
  - Under normal driving conditions, a dynamic latch plate functions as a sliding latch plate—the seat belt webbing can slide through it, although you may feel some additional friction compared to a sliding latch plate.
  - During a sudden stop or crash, a dynamic latch plate locks the lap belt at a fixed length.

- Due to the increased friction, some dynamic latch plates may seem to lock the seat belt, but dynamic latch plates do not lock a seat belt at a fixed length to secure a car seat under normal driving conditions.

- Except in the driver seating position, seat belts with dynamic latch plates always have a locking retractor.
- Vehicle manufacturers may call dynamic latch plates other names, like crash-locking latch plates, in their vehicle owner's manuals.

Dynamic Latch Plate Examples



Dynamic latch plate, front and back views



Dynamic latch plate, front and back views



Dynamic latch plate, side view

Sewn-on Latch Plate

Sewn-on latch plates are relatively rare, typically found in model year 1992 and older vehicles.

- Sewn-on latch plates are found both on lap belts and lap-and-shoulder belts.
- Webbing is threaded through slot(s) in this type of latch plate and then sewn together.

Sewn-on latch plates have no moving parts to lock the latch plate.

- Lap-and-shoulder belts with sewn-on latch plates have two retractors, one on the lap belt and one on the shoulder belt.
- Since it is the lap belt that secures a car seat, check the retractor on the lap belt for lockability.
  - If the retractor locks, you can secure a car seat using the lap belt.
  - If the retractor does not lock, you will not be able to secure a car seat in this seating position.

Sewn-on Latch Plate Examples



Sewn-on latch plate on lap-and-shoulder belt (left) and on lap belt (right).

LOCKING LATCH PLATES

After the lockability requirement went into effect with model year 1996 vehicles in the United States, locking latch plates were more common on lap-and-shoulder belts than they are today.

Beginning with model year 2008, most vehicles meet the lockability requirement in all passenger seating positions using locking retractors instead of locking latch plates.

- Some older vehicles, typically model years 2007 and older, are equipped with lap belts in the front center or rear seating positions. These lap belts typically have a locking latch plate.
- There are many different locking latch plate designs.
- Typically, a bar made of metal or plastic either slides or rotates to pinch the webbing segments together.

- A locking latch plate stays locked when it is parallel with the seat belt webbing.



This locking latch plate is locked because it is parallel with the seat belt webbing.



This locking latch plate is not locked because it tilts away from the seat belt webbing.

- To loosen a seat belt with a locking latch plate, unlock it by tilting the latch plate away from the seat belt webbing.

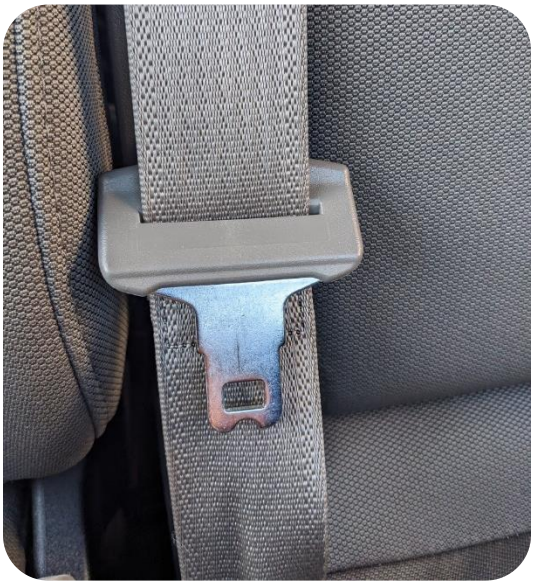
After installing a car seat using a seat belt with a locking latch plate, always check that the lap belt webbing and latch plate are parallel with one another and that the latch plate is locked.



Webbing is parallel with the locking latch plate.

Locking Latch Plate Examples

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





Locking latch plate, front and back views





Locking latch plate, front and back views



Locking latch plate, front view

Test for Latch Plate Lockability

If you cannot lock the seat belt at the retractor, use the following steps to confirm if the latch plate has the lockability feature needed to secure a car seat.

LATCH PLATE

STEP 4 Buckle the seat belt.

STEP 5 Grasp the center of the lap belt. Pull firmly upward.

NON-LOCKING LATCH PLATE	LOCKING LATCH PLATE
The lap belt lengthens or slides through the latch plate. You have a non-locking latch plate.	The lap belt does not lengthen or slide through the latch plate. You have a locking latch plate you may use to install a car seat.
YOU MUST PROCEED WITH ADDITIONAL APPROVED BELT-LOCKING STEPS.	**NO FURTHER LOCKABILITY CHECKS ARE NEEDED.**

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



LEARN • PRACTICE • EDUCATE—LATCH PLATES

Practice educating a caregiver on how to test for a locking latch plate.

Progress Check

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

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2 In what position does a locking latch plate need to be to make sure it is locked?

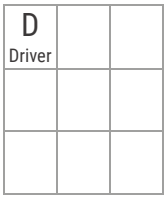
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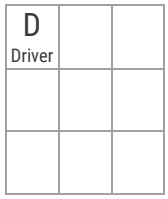
3 What are the steps for testing the latch plate for lockability?

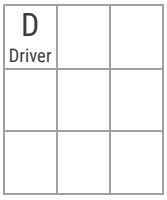
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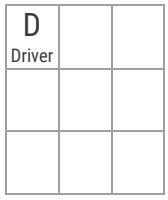
ACTIVITY—IDENTIFY LATCH PLATES AND RETRACTORS

1. For each vehicle, write the vehicle number and/or vehicle information and mark the seating position.
2. Test the seat belt for each assigned seating position.
3. Circle the type of latch plate and retractor in each assigned seating position.

Scenario #1	
Vehicle # Year: Make: Model:	**RETRACTOR** Non-Locking Locking None
Seating Position 	**LATCH PLATE** Non-Locking ▪ Sliding ▪ Dynamic ▪ Sewn-On Locking

Scenario #2	
Vehicle # Year: Make: Model:	**RETRACTOR** Non-Locking Locking None
Seating Position 	**LATCH PLATE** Non-Locking ▪ Sliding ▪ Dynamic ▪ Sewn-On Locking

Scenario #3	
Vehicle # Year: Make: Model:	**RETRACTOR** Non-Locking Locking None
Seating Position 	**LATCH PLATE** Non-Locking ▪ Sliding ▪ Dynamic ▪ Sewn-On Locking

Scenario #4	
Vehicle # Year: Make: Model:	**RETRACTOR** Non-Locking Locking None
Seating Position 	**LATCH PLATE** Non-Locking ▪ Sliding ▪ Dynamic ▪ Sewn-On Locking

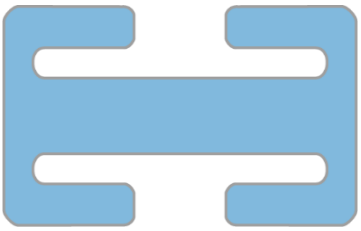
Additional Step to Lock Lap-and-Shoulder Belts

At times, you will find that the retractor and latch plate do not lock due to the age of the vehicle. What do you do then?

LOCKING CLIPS

A locking clip is an allowed alternative way to lock a seat belt for car seat installation under normal driving conditions. A locking clip holds or "locks" the lap belt of a lap-and-shoulder belt at a fixed length to secure a car seat.

- To use a locking clip, the seat belt must have all these characteristics:
  1. It is a lap-and-shoulder belt.
  2. The seat belt has a non-locking retractor.
  3. The latch plate is not sewn-on.
  4. The seat belt is only one (continuous) piece of webbing.
- Follow the car seat instruction manual for how to use a locking clip.
  - Typically, a locking clip is placed no more than one inch (2.5 cm) from the latch plate.

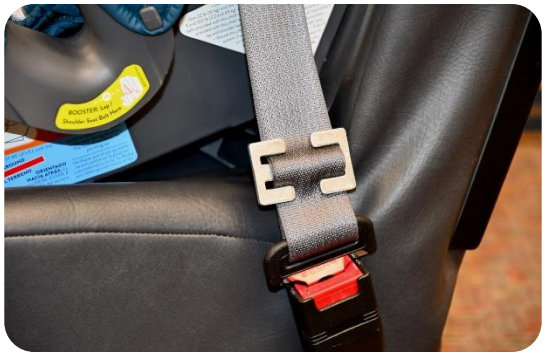


Locking clip

Use of a locking clip will be rare because passenger seat belt systems have been required to lock since model year 1996 in the United States and model year 2015 in Canada.



Locking clip, stowed on car seat

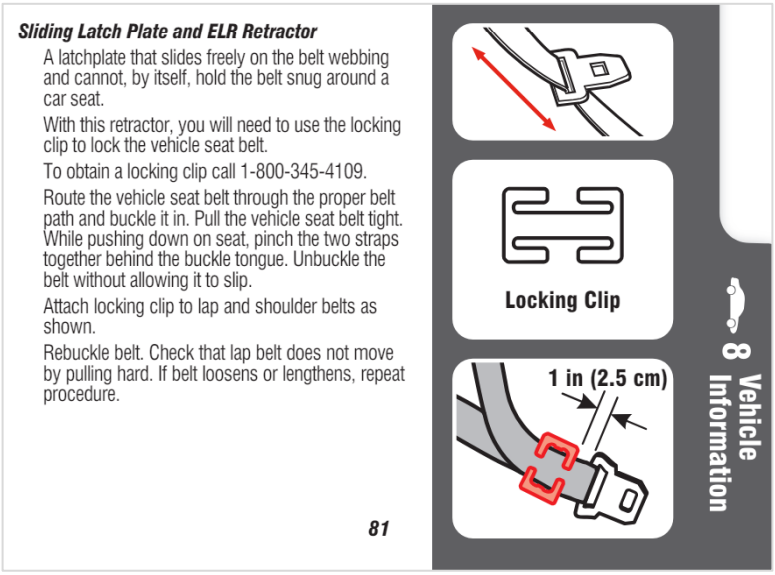


Locking clip in use on lap-and-shoulder belt

Where do you get locking clips?

Locking clips may be provided with the car seat by the car seat manufacturer.

- Look over the car seat or check the car seat instruction manual to find the storage location of the locking clip.
- If a locking clip was not provided with the car seat or is lost, the car seat manufacturer may provide one, possibly free of charge.



Sliding Latch Plate and ELR Retractor

A latchplate that slides freely on the belt webbing and cannot, by itself, hold the belt snug around a car seat.

With this retractor, you will need to use the locking clip to lock the vehicle seat belt.

To obtain a locking clip call 1-800-345-4109.

Route the vehicle seat belt through the proper belt path and buckle it in. Pull the vehicle seat belt tight. While pushing down on seat, pinch the two straps together behind the buckle tongue. Unbuckle the belt without allowing it to slip.

Attach locking clip to lap and shoulder belts as shown.

Rebuckle belt. Check that lap belt does not move by pulling hard. If belt loosens or lengthens, repeat procedure.

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Locking clip instructions from car seat instruction manual

Remember, correct installation of a car seat requires the lap belt to 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 the chart on the following page. Remember to test for a locking feature in the retractor first, as that location is most common.

What Locks a Seat Belt

RETRACTOR

STEP 1 Slowly and gently pull all the webbing out of the retractor. Do not pull the webbing out quickly as this could engage the emergency locking feature and prevent you from pulling the webbing out fully.

STEP 2 Slowly release a few inches of webbing into the retractor. Listen for a clicking sound.

STEP 3 While still holding the webbing, gently try to pull the webbing back out again.

NON-LOCKING RETRACTOR

The retractor allows you to pull webbing back out. You do not hear a clicking sound when releasing the webbing back into the retractor. You have a non-locking retractor.

NOW TEST THE LATCH PLATE FOR LOCKABILITY.

LOCKING RETRACTOR

The retractor does not allow you to pull webbing back out. You may hear a clicking sound when releasing the webbing back into the retractor. You have a locking retractor you may use to install a car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

LATCH PLATE

STEP 4 Buckle the seat belt.

STEP 5 Grasp the center of the lap belt. Pull firmly upward.

NON-LOCKING LATCH PLATE

The lap belt lengthens or slides through the latch plate. You have a non-locking latch plate.

YOU MUST PROCEED WITH ADDITIONAL APPROVED BELT-LOCKING STEPS.

LOCKING LATCH PLATE

The lap belt does not lengthen or slide through the latch plate. You have a locking latch plate you may use to install a car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

STEP 6 If the seat belt is a lap-and-shoulder belt and the latch plate is not sewn-on, you may use a locking clip to install the car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

In the rare case when you cannot lock the seat belt at a fixed length, another seating position must be used.



LEARN • PRACTICE • EDUCATE—LOCKABILITY

Using the flowchart on the previous page as a guide, practice educating a caregiver on how to lock the seat belt in the following scenarios.

1. Lap-and-shoulder belt with locking retractor and non-locking latch plate
2. Lap belt with no retractor and locking latch plate
3. Lap-and-shoulder belt with a non-locking retractor and non-locking latch plate

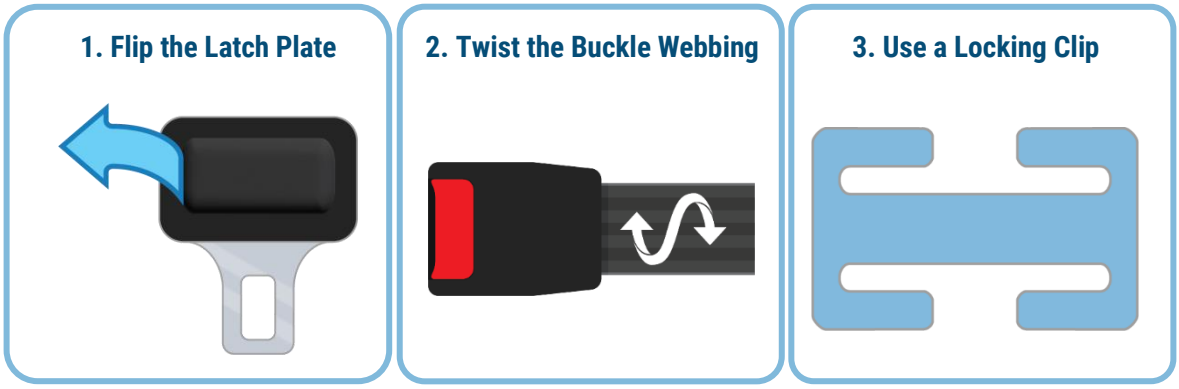
Troubleshooting Locking Latch Plates

Occasionally, even if the seat belt has a locking latch plate, a fix may be needed.

- To stay locked, a locking latch plate must be parallel with the seat belt webbing.
- You may find that a locking latch plate is not in a locked position when the seat belt has been used to install a car seat.
  - Usually, this is because the latch plate is tilted away from the webbing.
- Tilting the latch plate to a different angle unlocks the seat belt for lengthening, but the latch plate should never be in this position when used to secure a car seat.

Three Fixes

- There are three possible fixes to address this condition. Use the fix that provides the best correct installation that the caregiver will be able to reproduce.

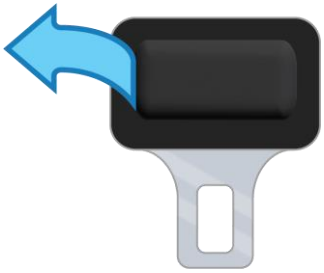


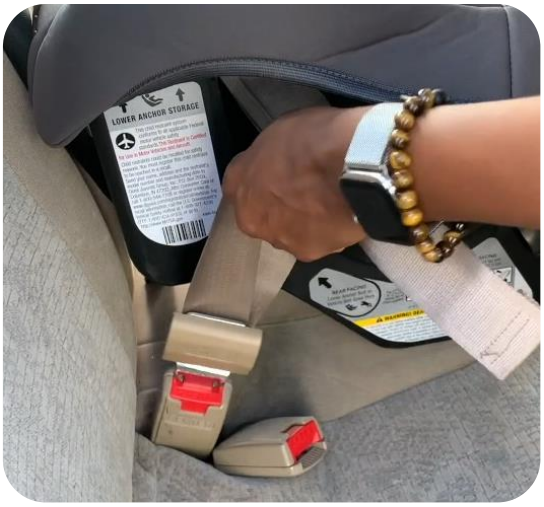
Do not use these techniques unless the seat belt will not stay locked at a fixed length during normal driving conditions.

FIX 1: FLIP THE LATCH PLATE

For Lap Belt or Lap-and-Shoulder Belt Installations

- Flipping the locking latch plate may align it parallel with the seat belt webbing and allow the latch plate to stay locked.
  - Using this fix may cause a twist in the seat belt webbing which is acceptable in this situation.
- Before using this fix, check that the buckle will accept the latch plate in a flipped position.
- Not all buckles accept latch plates in a flipped position.





Locking latch plate in normal position



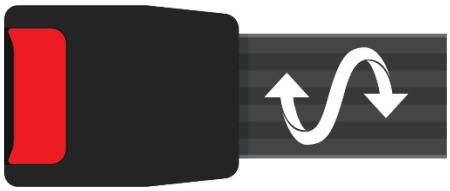
Locking latch plate after flipping

Check the vehicle owner's manual to see if flipping the latch plate is allowed. Some vehicle manufacturers do not allow flipping the latch plate.

FIX 2: TWIST THE BUCKLE WEBBING

For Lap Belt or Lap-and-Shoulder Belt Installations

- When a locking latch plate cannot be locked or does not remain locked, twisting the buckle webbing is another possible fix.



- Twisting the buckle webbing will make it shorter and reposition the latch plate to a place where it is more likely to align correctly with the webbing and stay locked.
  - Twist the buckle webbing a full turn each time, with a maximum of three twists.
  - Do not over-twist the buckle webbing. Always use a minimum number of twists.
- This method of repositioning a locking latch plate can also help solve other installation issues, such as when the buckle falls inside the belt path of the car seat or when more space is needed to apply a locking clip.



Check the vehicle owner's manual to see if twisting the buckle webbing is allowed.

Vehicle owner's manual showing twist instructions

214 SAFETY

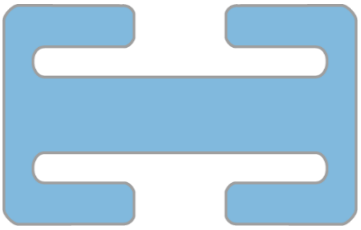
Any seat belt system will loosen with time, so check the belt occasionally, and pull it tight if necessary.

If the buckle or the cinching latch plate is too close to the belt path opening of the child restraint, you may have trouble tightening the seat belt. If this happens, disconnect the latch plate from the buckle and twist the short buckle-end belt up to three full turns to shorten it. Insert the latch plate into the buckle with the release button facing out, away from the child restraint. Repeat steps 4 to 6, above, to complete the installation of the child restraint.

FIX 3: USE A LOCKING CLIP

For Lap-and-Shoulder Belt Installations Only

- When a locking latch plate on a lap-and-shoulder belt does not lock correctly to secure a car seat, a locking clip may be used to hold the lap belt at a fixed length.



Inflatable Seat Belts

- An inflatable seat belt is a relatively rare type of lap-and-shoulder belt found in some rear seats. Inflatable seat belts have a sewn-on latch plate and two retractors, one for the lap belt and one for the shoulder belt.
- The lap belt:
  - does not inflate.
  - has a locking retractor that can be used to install a car seat.
- The shoulder belt:
  - Is made of webbing significantly thicker than a regular seat belt.
  - Contains a small air bag designed to inflate in crash.
  - Spreads crash forces over a greater area of the chest than standard seat belts.
  - Provides additional head and neck support during a crash.
  - Has a non-locking retractor.



Inflatable shoulder belt showing thicker webbing and large latch plate housing



Inflatable shoulder belt, inflated

Many car seat manufacturers do not allow use of their products with an inflatable seat belt. Check the car seat instruction manual or the Frequently Asked Questions (FAQs) section of the manufacturer's website for guidance if an inflatable seat belt is present. Contact the car seat manufacturer's customer service if you do not find an answer.

Check the vehicle owner's manual to see if the vehicle manufacturer allows an inflatable seat belt to be used to install a car seat.

Progress Check

Fill in the correct answers from the right-hand column for each of the questions. Some answers may be used more than once or not at all.

1 **Name the three types of latch plates that do not lock to secure a car seat under normal driving conditions.**

TG PAGE(S) ↓

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

TG PAGE(S) ↓

3 **What type of latch plate may also be referred to as a crash-locking latch plate?**

TG PAGE(S) ↓

4 **What is the most common type of retractor?**

TG PAGE(S) ↓

5 **What can be used to lock the lap belt of a lap-and-shoulder belt at a fixed length? (Select three answers.)**

TG PAGE(S) ↓

ANSWER CHOICES

- Non-locking retractor
- Locking retractor
- Switchable retractor
- Dynamic latch plate
- Locking latch plate
- Sliding latch plate
- Sewn-on latch plate
- Locking clip
- Flipping the latch plate

MODULE VIDEOS

- Emergency Locking Retractor (ELR)
- Switchable Retractor
- No Retractor
- What Locks a Seat Belt? Steps 1–3
- Latch Plate Types
- Locking Latch Plate
- What Locks a Seat Belt? Steps 4–5
- Locking Clips
- What Locks a Seat Belt? Review Steps 1–6
- Troubleshooting Locking Latch Plates—Three Fixes



5

Air Bags

In this module, we will answer:



- **What is the purpose and function of air bags related to car seats, booster seats and seat belts?**
- **How do you identify the different types of air bags, their locations in vehicles, and the markings and warning labels that are in vehicles?**
- **What are best practices for air bags?**



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

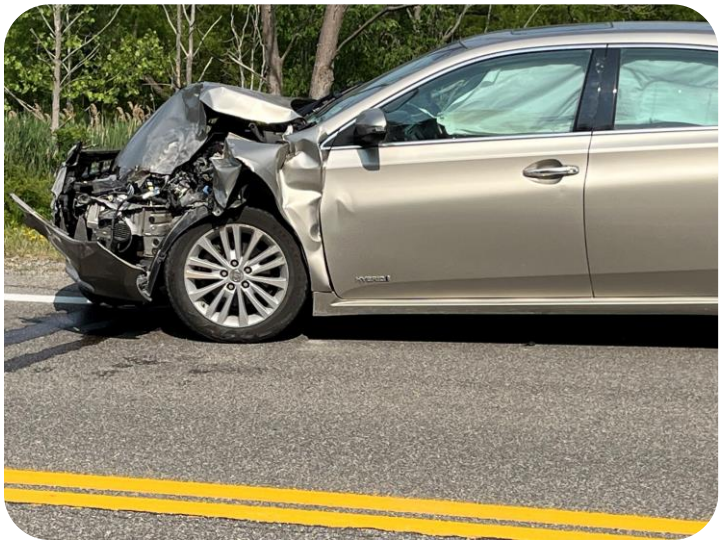
advanced air bag
curtain air bag
dashboard
front center air bag
frontal air bag
glove box
gross vehicle weight rating (GVWR)
inboard
knee air bag
outboard
passenger air bag
passenger vehicle
passive safety feature
seat cushion air bag
seat-mounted side air bag
side air bag

ABOUT THIS MODULE

Air bags are a passive safety feature built into the vehicle to help protect occupants in a crash. Passive safety features do not require the occupant to do anything for them to work. Air bags can pose concerns for the safe transportation of children. We will learn best practices to reduce possible risks.

Purpose and Function of Air Bags

- An air bag is a vehicle safety device made up of a fabric bag designed to rapidly inflate when the vehicle detects there is a crash.
- Air bags are supplemental restraint systems because they are designed to work together with seat belts to reduce injury to vehicle occupants.



- Air bags spread crash forces over a larger area of the occupant's body compared to using only a seat belt. This allows the occupant to better ride down a crash without the force being concentrated on a smaller area of the body.

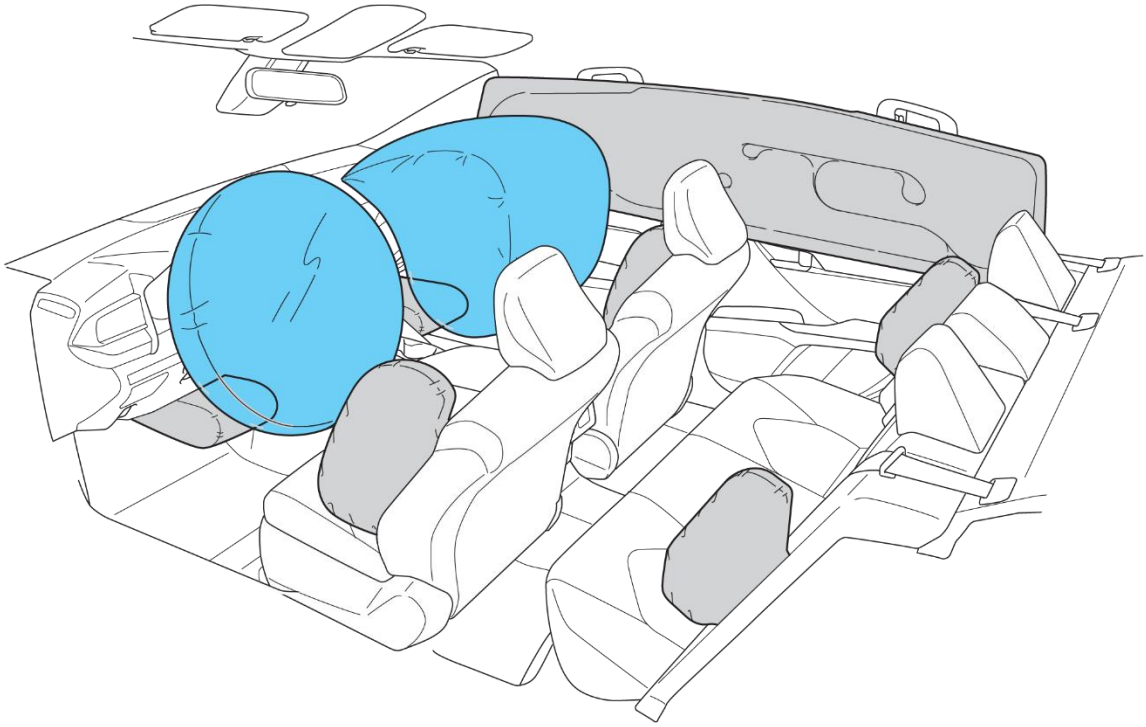
Seat belts and air bags are designed to work together to provide protection for vehicle occupants.

Categories of Air Bags

There are two main categories of air bags: frontal and side.

FRONTAL AIR BAGS

- Frontal air bags for the driver and front passenger seating positions offer protection for those occupants who are correctly seated and using seat belts.
- Frontal air bags typically are found in the steering wheel and dashboard.
- Frontal air bags may inflate in frontal, side impact, rollover and vault crashes.
- Most frontal air bags cover one front passenger seating position.
- Some vehicles have a front center passenger seating position. Frontal air bags in these vehicles may be wider, providing protection for both the front center and outboard passenger seating positions.



Vehicle air bag diagram, showing how frontal driver and passenger air bags protect occupants when inflated



Always check the vehicle owner's manual to confirm the location of air bags in the vehicle.

TECH TIP

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



Markings

- Vehicle manufacturers generally mark where frontal air bags come out in the vehicle during a crash.
- Each vehicle manufacturer may call frontal air bags something slightly different.

Examples of Frontal Air Bag Markings







SRS
AIRBAG

Many air bags are marked SRS, for "supplemental restraint system." Remember, air bags are supplemental and work together with seat belts.

Warning Labels

For frontal air bags that inflate from the dashboard, a warning label must be located on the visors.

- The warning label provides key reminders for caregivers including:
  - The rear seat is the safest place for children.
  - Never put a rear-facing car seat in the front passenger seating position.





Air bag warning label found on vehicle visor

Types of Frontal Air Bags

Frontal Air Bags that Are Always On



Since model year 1998, some passenger vehicles have driver and passenger air bags that automatically turn on when the vehicle is started. The frontal air bags in these vehicles cannot be turned off.

Frontal Air Bags that Turn On and Off Using a Manual Switch

- Some vehicles may have a manual switch to turn the passenger air bag on and off.



A manual passenger air bag switch is most often found in vehicles prior to model year 2013 with a very small or no rear seat (e.g., regular cab pickup trucks) or trucks with a gross vehicle weight rating (GVWR) over 10,000 lbs. (4,536 kg).

- In the U.S., since model year 2013, vehicle manufacturers are no longer allowed to install manual switches in vehicles with a GVWR under 10,000 lbs. (4,536 kg).
  - Very few vehicles used by families exceed a GVWR of 10,000 lbs. (4,536 kg).

TECH TIP

To find the GVWR of a vehicle, check the vehicle certification label typically found on the driver door frame or on the side of the driver door.

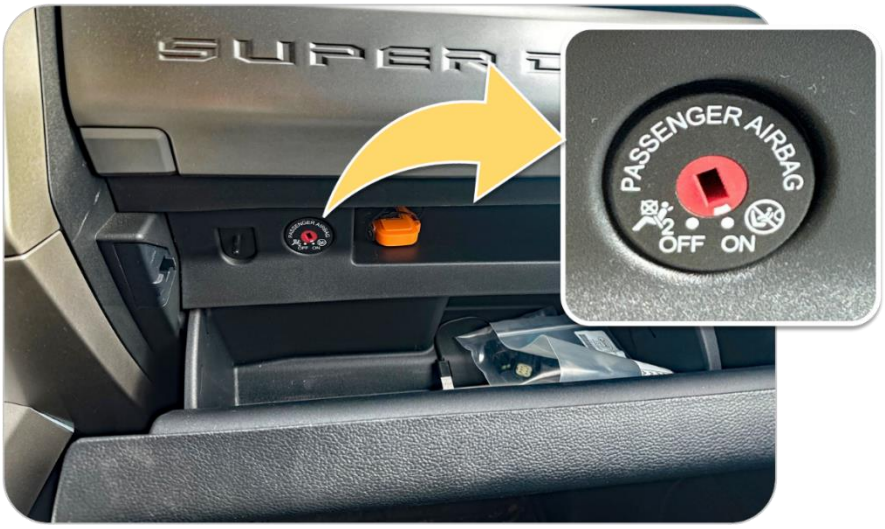
- Aftermarket manual switches, which must get NHTSA preapproval, are uncommon.



In Canada, manufacturers are allowed to install a manual passenger air bag switch in new vehicles. In addition, for a vehicle without a manual switch, caregivers may request to have a manual switch installed. Visit **tc.canada.ca/en/road-transportation/publications/air-bag-deactivation** for more information.

- Manual switches typically are located on the dashboard or in the glove box.

Manual passenger air bag switch, located in vehicle glove box



- Most manual switches are turned on and off using the vehicle's ignition key.
  - A light near the manual switch indicates when the passenger air bag has been turned off.
  - The passenger air bag will remain off until it is turned back on.

Check the vehicle owner's manual to understand the correct operation of a manual passenger air bag switch.

Advanced Frontal Air Bags

Starting with model year 2007, most vehicles are equipped with advanced frontal air bag systems.

- Advanced frontal air bags use a complex system of sensors and other technology to automatically adjust air bag inflation during a crash.
- Based on the size of the occupant, the sensors tell the system to adjust the air bag inflation strength or to turn the air bag system off.
- Vehicle manufacturers may refer to advanced air bags as smart air bags.



Vehicle dashboard notifications of passenger air bag status, based on sensors

Other Frontal Air Bags[1]

Knee Air Bag

- Knee air bags are located under the steering wheel or glove box.
- Knee air bags significantly reduce the risk of injuries to the knee, thigh and hip and help to position the occupant during a crash.



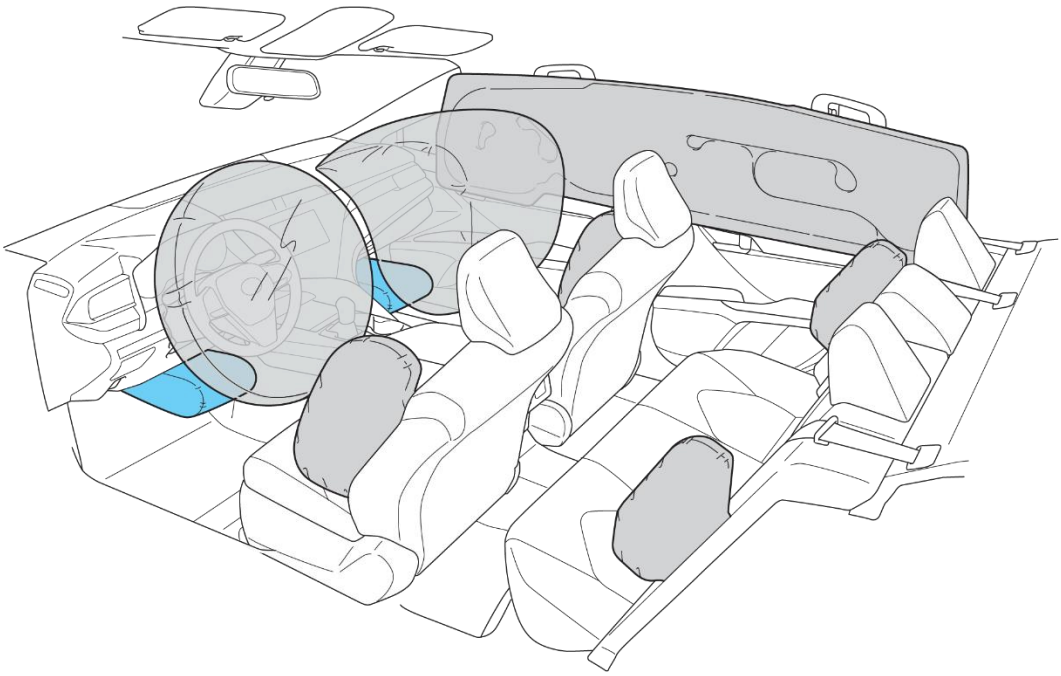
Knee air bag

Seat Cushion Air Bag

- Seat cushion air bags are typically found in the cushion of the driver's seat and/or the front passenger seat.
- These small air bags inflate just enough to raise the front portion of the vehicle seat cushion, keeping the occupant correctly positioned during a frontal crash.



Seat cushion air bag



Vehicle air bag diagram, showing driver and front passenger knee air bags

[1] Knee and seat cushion air bag photos: Insurance Institute for Highway Safety, Arlington, Virginia USA. www.iihs.org

SIDE AIR BAGS

- Side air bags are designed to fill the space between the occupant and the vehicle door and/or window, helping to prevent injuries to the head and chest.
- They also help keep unrestrained occupants from being thrown from the vehicle during a crash.
- Side air bags can be found in various places in the vehicle including inside the vehicle seat and along the roofline.
- Side air bags may inflate in side impact, rollover, vault or frontal crashes.



Side air bag that protects the head and chest[2]

Markings

- Like frontal air bags, vehicles are typically marked to show where side air bags will come out in the vehicle during a crash.
- Markings may be found almost anywhere in the vehicle, most often near the roofline and on the side of the vehicle seat.



Side curtain air bag marking



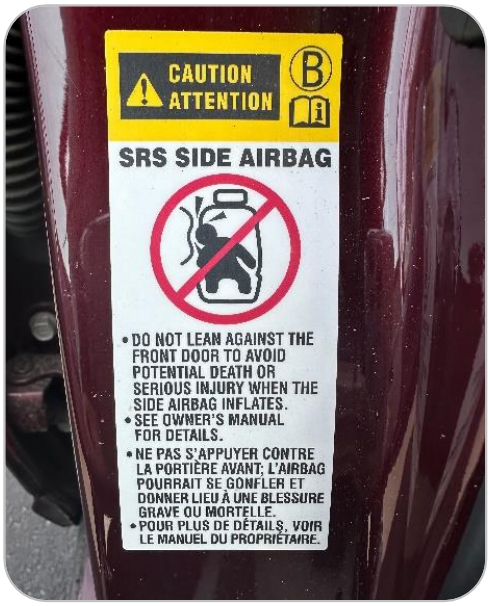
Seat-mounted side air bag marking

- Each vehicle manufacturer may call side air bags something slightly different.

[2] Air bag photo: Insurance Institute for Highway Safety, Arlington, Virginia USA. **www.iihs.org**

Warning Labels

- Vehicles may also have a side air bag warning label.
- Typically, the warning labels for side air bags are found on the door frame, the side of the door or the end of the dashboard.
- The warning label provides a reminder to not lean against where an air bag opens in a crash.



Side air bag warning label on rear door frame

Types of Side Air Bags

Curtain Air Bags

- Curtain air bags are side air bags that inflate from the roofline above the side windows.
- Curtain air bags typically run the length of the roofline providing protection to outboard occupants in multiple seating rows.
- Curtain air bags inflate downward. They absorb crash forces and help to prevent occupants from striking a window and/or door and from colliding with an incoming vehicle or object.
- The most common marking for a curtain air bag is found near the roofline.
- Other names that vehicle manufacturers use for curtain air bags include inflatable curtains and safety canopies.



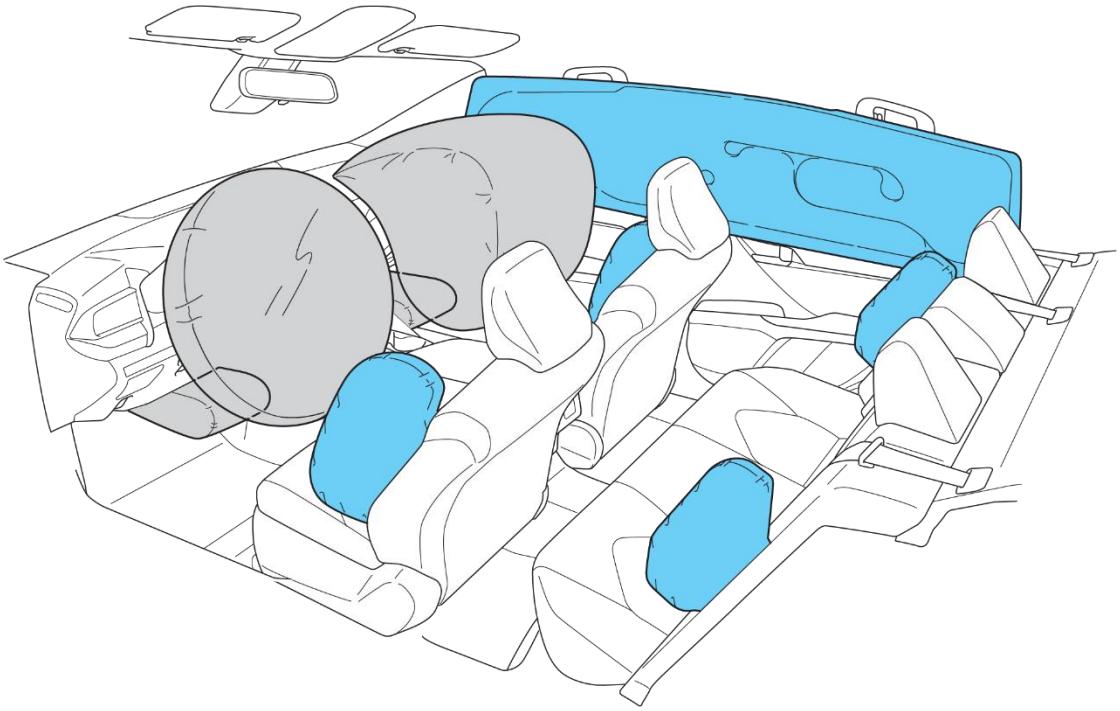
Curtain air bag marking near roofline

Seat-Mounted Side Air Bags

- Seat-mounted side air bags offer side impact protection to occupants by helping to absorb crash forces.
- Seat-mounted side air bags open from the outboard sides of the vehicle seatback, inflating forward between the vehicle seats and the doors and windows.
- Seat-mounted side air bags are generally labeled by markings or tags on the side of the front and/or rear vehicle seats closest to the vehicle doors.
- Vehicle manufacturers may refer to seat-mounted air bags as torso air bags.



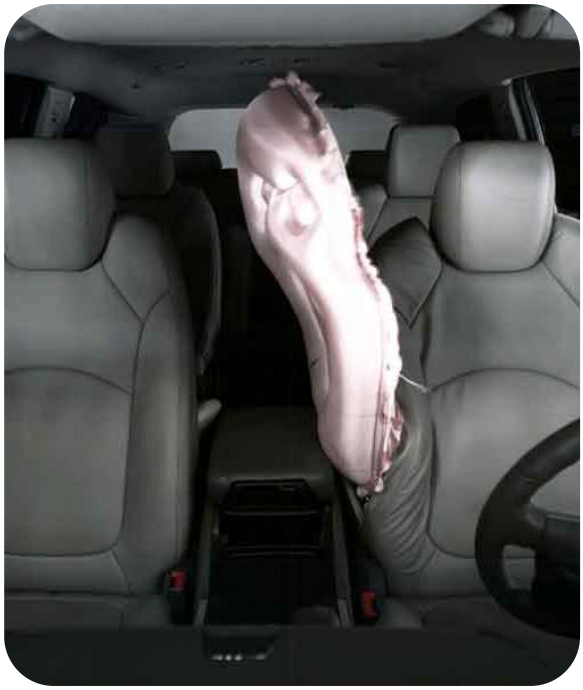




Vehicle owner's manual diagram showing curtain air bag and seat-mounted side air bags

Front Center Air Bags

- In some vehicles, front center air bags are present.
- These air bags inflate in a similar way to seat-mounted side air bags but they inflate from the inboard side of the driver vehicle seat.
- Front center air bags help prevent the front seat occupants' heads from hitting each other in a side impact crash.



- Markings typically are found on the inboard side of the driver vehicle seat.



NEW TECHNOLOGY

- Future regulations and technology developments may place more focus on rear seat occupant safety.
- In 2021, a vehicle manufacturer released the first vehicle with rear seat frontal air bags.



[3]

TECH TIP

As technology evolves, watch for additional air bags in the rear seat that may affect which seating position a car seat can be installed.

Remember to refer to the vehicle owner's manual regarding new technology.

[3] Rear seat frontal air bag photo: Insurance Institute for Highway Safety, Arlington, Virginia USA. www.iihs.org

Best Practices • Air Bags

Frontal Air Bags

Children under 13 years of age should ride in the back seat, whenever possible, so they are away from the frontal air bag, even if it is an advanced air bag system.



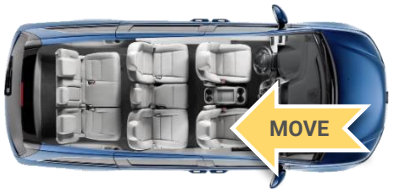


NEVER install a rear-facing car seat in the front passenger seat in a vehicle with an active or advanced frontal air bag.

- If the passenger air bag inflates in a crash, the rear-facing child may be severely injured or killed by the force of the inflating air bag.
- This warning for rear-facing car seats applies to advanced air bags—even if the 'air bag off' indicator shows that the air bag is 'OFF'.

If a forward-facing child must sit in the front passenger seat, make sure they are correctly restrained in an appropriate car seat or booster seat.

- Move the vehicle seat as far back from the air bag as possible.
- Check the vehicle owner's manual. Vehicle manufacturers warn against installing a car seat or booster seat in the front seat, especially when a frontal air bag is present.
- Educate caregivers that occupants should not lean against or put objects or body parts near where an air bag would open in a crash.





Manual Air Bag Switches

When transporting child occupants in the front passenger seating position, follow the vehicle manufacturer's instructions concerning when to turn off the passenger air bag.

- Always return the manual passenger air bag switch to the original 'ON' position after transporting child occupants.
- Forgetting to turn the switch back on is dangerous because the air bag will not be active to protect adult occupants.



Side Air Bags



Side air bags are typically compatible with car seat and booster seat use as long as the child is correctly restrained and all vehicle manufacturer instructions have been followed.

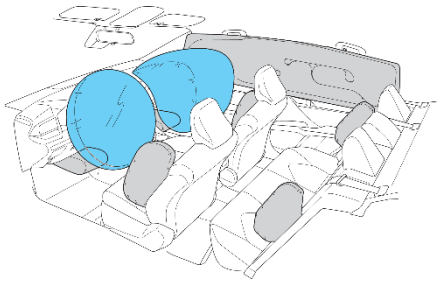
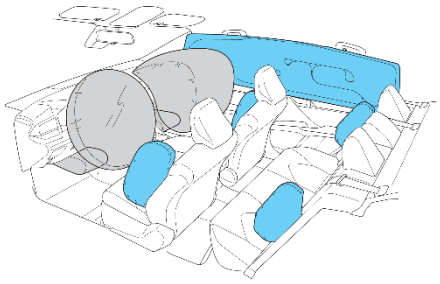
If either the vehicle or car seat manufacturer does not allow the use of a car seat or booster seat in a seating position with a side air bag, use a different seating position in the vehicle.

For children who ride in boosters, the vehicle's side air bags may provide extra protection.

Educate caregivers that occupants should not lean against or put objects or body parts near where an air bag would open in a crash.



Comparison of Frontal and Side Air Bags

	Frontal Air Bags	Side Air Bags
		
Size	Larger	Narrower
Inflation Path	In front of the occupant, to absorb energy and help the occupant ride down the crash.	Between the vehicle door and/or window and occupant, to protect the occupant from striking the window and/or door.
Car Seat and Booster Seat Considerations	A child's car seat or booster seat positions them higher and more forward on the vehicle seat, putting them dangerously closer to an inflating frontal air bag.	A child's car seat or booster seat positions them higher and more forward on the vehicle seat. A boosted child is more likely to benefit from the protection provided by side air bags.



LEARN • PRACTICE • EDUCATE—AIR BAGS

Practice educating a caregiver on why their 6-year-old child who is 55 lbs. (25 kg) may sit by a side air bag but not a frontal air bag.

Progress Check

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

TG PAGE(S) ↓

2 List at least three locations in the vehicle where air bags might be located.

TG PAGE(S) ↓

3 Until what age should children ride in the rear seat?

TG PAGE(S) ↓

4 Why should a rear-facing car seat not be installed in front of an active frontal air bag?

TG PAGE(S) ↓



ACTIVITY—LOCATE AIR BAG INFORMATION IN MANUALS AND VEHICLES

1. Using two vehicle owner's manuals, look up and document the air bag information for each vehicle.
2. Then locate and document information about the markings and warning labels that are present in the vehicle.

	Vehicle 1	Vehicle 2
What is the vehicle make, model and year?		
What pages discuss frontal air bags?		
Which type of passenger frontal air bag system does the vehicle have?	☐ Always on ☐ Manual Switch ☐ Advanced	☐ Always on ☐ Manual Switch ☐ Advanced
Are there markings or warning labels for frontal air bags? If so, where are they? What do they say?		
What pages discuss side air bags?		
Which type(s) of side air bags does the vehicle have?	☐ Curtain ☐ Seat-mounted, front seat ☐ Seat-mounted, rear seat ☐ Front Center	☐ Curtain ☐ Seat-mounted, front seat ☐ Seat-mounted, rear seat ☐ Front Center
Are there markings or warning labels for side air bags? If so, where are they? What do they say?		

6

Lower Anchors and Tethers

In this module, we will answer:

- What are the U.S. and Canadian Federal standards related to lower anchors and tethers?
- How do you identify lower anchor and tether anchor locations and markings in vehicles?
- How do you know when to use the lower anchor attachment system on a car seat?
- What is borrowing of lower anchors and when is it allowed?
- What is a tether and how does it work to reduce injury?
- What are possible challenges related to tethering in pickup trucks?
- How do you educate caregivers on best practices related to lower anchor and tether anchor use?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** if needed.

- Canadian Motor Vehicle Restraint Systems and Booster Seats Safety Regulations (RSSR)
- CMVSS 210.1
- CMVSS 210.2
- design standard
- direct routing tether system
- flexible lower anchor attachment system
- FMVSS 213
- FMVSS 225
- head restraint
- incompatibility
- indirect routing tether system
- ISOFIX
- label
- LATCH (Lower Anchors and Tethers for CHildren)
- LATCH system
- lower anchor adjuster
- lower anchor attachment system
- lower anchor connector
- lower anchors
- performance standard
- rigid lower anchor attachment system
- router
- seat bight
- tether
- tether adjuster
- tether anchor
- tether hook
- UAS (Universal Anchorage System)

ABOUT THIS MODULE

You have learned about how seat belt systems are used to secure car seats. To provide a dedicated and simplified car seat installation option, most vehicles have an alternative attachment system. In the U.S., this system is commonly called LATCH (Lower Anchors and Tethers for CHildren).

Federal Standards Related to Lower Anchors and Tethers

Certain NHTSA Federal Motor Vehicle Safety Standards (FMVSS) and Transport Canada Canadian Motor Vehicle Safety Standards (CMVSS) govern lower anchors and tethers.

- Each agency sets performance standards to specify how car seats and vehicle parts must work, including in crashes.
- A few design standards also exist to promote uniformity of certain vehicle and car seat parts.

Vehicles

- FMVSS 225 and CMVSS 210.1 and 210.2 set the design and performance standards for lower anchors and tethers in passenger vehicles with a gross vehicle weight rating (GVWR) of 8,500 lbs. (3,856 kg) or less.

Car Seats

- FMVSS 213 and the Canadian Motor Vehicle Restraint Systems and Booster Seats Safety Regulations (RSSR) require most car seats with harnesses to have lower anchor attachment systems.
  - While these attachment systems must meet many performance requirements, design is mostly up to each car seat manufacturer.



Canadian regulations require a tether to be present on car seats that can be used forward-facing.



FMVSS 213 will sunset (end) on December 5, 2026, and will be replaced by FMVSS 213b. (This date is subject to change.)

Vehicle Parts

Vehicle parts of LATCH (Lower Anchors and Tethers for CHildren) are called lower anchors and tether anchors.

- A vehicle LATCH system is made up of two lower anchors and one tether anchor.

In Canada, the Universal Anchorage System (UAS) consists only of the lower anchors. The tether anchor is referenced separately.

Most vehicles made since September 2002 must have at least two seating positions with a LATCH system/UAS with tether anchor. A tether anchor for use with a seat belt must be present in one additional seating position. Lower anchors and tether anchors were introduced in some vehicles as early as 2000.

- In most vehicles, a LATCH system/UAS with tether anchor is found in each of the two rear outboard seating positions.
  - A few vehicles provide an extra LATCH system/UAS with tether anchor for the rear center seating position.
  - It is possible for LATCH systems/UAS with tether anchors to be present in third row seating positions.

TECH TIP

In the U.S. and Canada, if lower anchors are present in a seating position, a tether anchor must also be provided in that seating position, unless the vehicle exceeds the 8,500 lbs. (3,856 kg) GVWR covered by the Federal standards. (Exception: Convertible cars)

The vehicle owner's manual identifies the seating positions with any lower anchors and/or tether anchors.

TECH TIP

While the name LATCH is commonly used in the United States to refer to lower anchors, and UAS was adopted in Canada, ISOFIX is the term used elsewhere. Vehicles made by companies based outside North America (especially Europe) often identify lower anchors as ISOFIX in vehicle owner's manuals and on markings.

LOWER ANCHORS

Lower anchors are a standardized pair of metal bars, located on the vehicle seat, where a car seat's lower anchor connectors can be attached.

Lower Anchor Locations

The lower anchors are generally located in the area where the vehicle seat cushion meets the vehicle seatback, known as the seat bight.

- Lower anchors must be spaced 11 inches (28 cm) apart from center to center.



LOWER ANCHOR MARKINGS

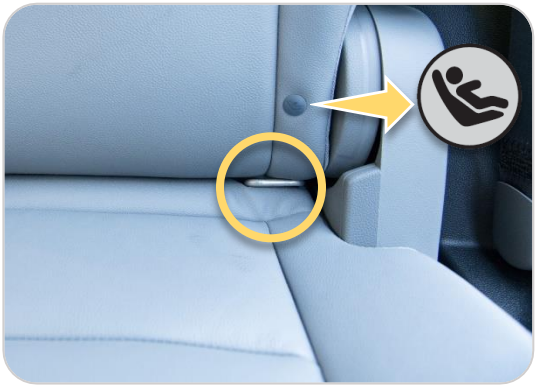
Some lower anchors are visible while others have a cover or are located deep within the seat bight.

- If the lower anchors are not visible, a circle—with or without a symbol or words—must be attached to the vehicle seat or on a tag nearby to mark the lower anchor locations.
  - In the U.S., if the lower anchors are visible per the Federal standard, the markings are not required.



This marking for lower anchors is common in the U.S. and required in Canada.

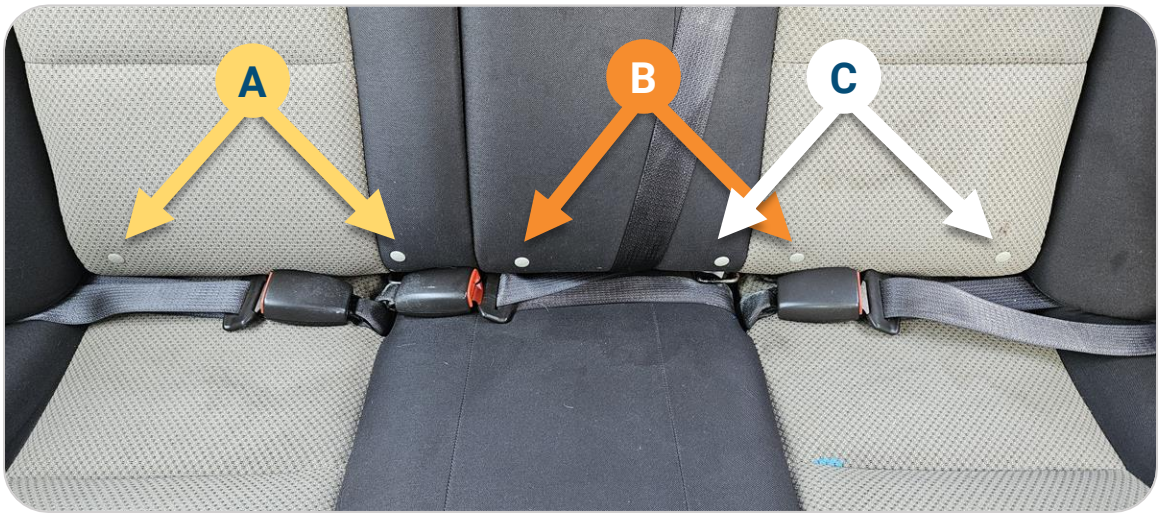
In Canada the markings are required even if the lower anchors are visible.



Some lower anchors are visible



Many lower anchors are inside the seat bight (not visible)



2010 Chevy Malibu has overlapping lower anchors (marked with circular buttons).

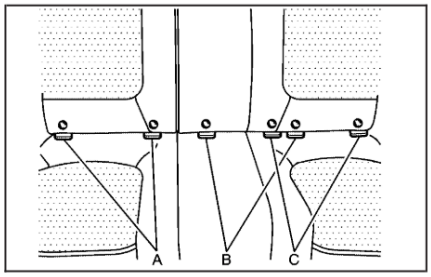
2010 Chevy Malibu vehicle owner's manual shows which lower anchors are used for each seating position.

Notice: **Do not let the LATCH attachments rub against the vehicle's safety belts. This may damage these parts. If necessary, move buckled safety belts to avoid rubbing the LATCH attachments.**

Do not fold the empty rear seat with a safety belt buckled. This could damage the safety belt or the seat. Unbuckle and return the safety belt to its stowed position, before folding the seat.

If you need to secure more than one child restraint in the rear seat, see *Where to Put the Restraint on page 2-42*. Depending on where you place the child restraint, you may not be able to access certain safety belt assemblies or LATCH anchors for additional passengers or child restraints.

You cannot secure three child restraints using the LATCH anchors in the rear seat at the same time, but you can install two of them. If you want to do this, install one LATCH child restraint in the passenger-side position, and install the other one either in the driver-side position or in the center position. Refer to the following illustration to learn which anchors to use.



A. Passenger Side Rear Seat Lower Anchors
B. Center Rear Seat Lower Anchors
C. Driver Side Rear Seat Lower Anchors

Make sure to attach the child restraint at the proper anchor location.

TETHER ANCHORS

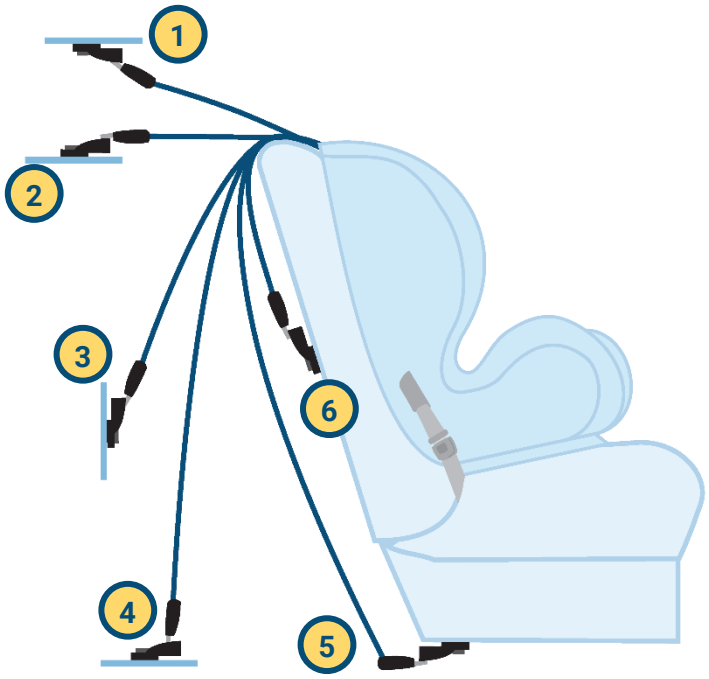
Tether anchors are a vehicle part where a car seat's tether, when provided, can be attached.

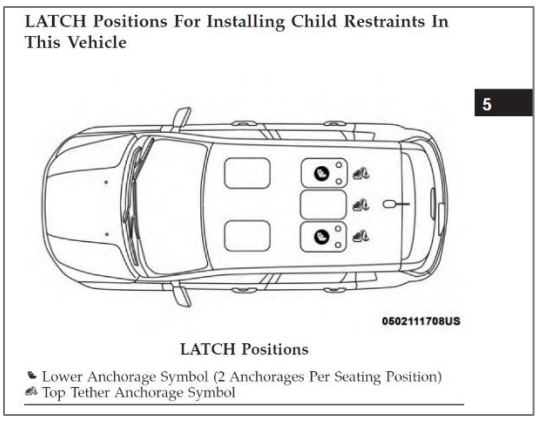
- Tether anchors have been required in most vehicles since September 2000.
  - Convertible cars and passenger vehicles heavier than 8,500 lbs. (3,856 kg) GVWR are exempt from this requirement, though some manufacturers of these vehicles provide tether anchors voluntarily.
- Some seating positions have a tether anchor but no lower anchors.
  - In those positions, a car seat is installed using the seat belt and tether, if appropriate.

Tether Anchor Locations

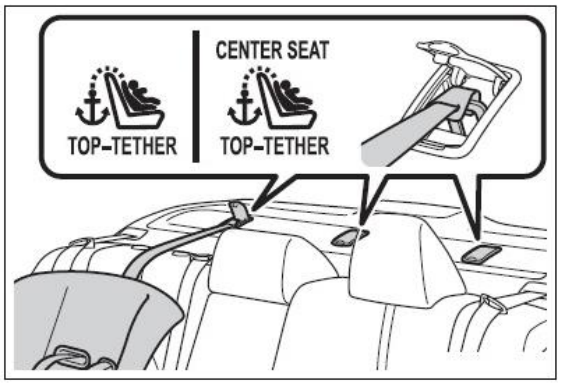
The following are some of the possible tether anchor locations.

1. Ceiling above/behind rear seating positions
2. Rear window shelf
3. Back wall (pickup trucks)
4. Floor of cargo area
5. Under the vehicle seat
6. Back of vehicle seat





Vehicle owner's manual showing locations of lower anchors and tether anchors



Vehicle owner's manual showing locations of tether anchors

Tether Anchor Markings

Tether anchors may be visible or covered by a flap, cap, carpet slit or door.



A common marking for tether anchors

- In the U.S., Federal 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 symbols and/or words.
- Other vehicle hardware is sometimes confused with tether anchors.
  - Since this other hardware might not be strong enough to withstand crash forces, always check for tether anchor markings.
  - If unmarked, check the vehicle owner's manual to identify the tether anchors.

In Canada, if a tether anchor is hidden under a cover or in a location not immediately visible, there must be a marking or label indicating the presence of the anchor. The marking or label should be located in a visible position near the cover or on the cover itself.



These tether anchors (circled) are on the back of the vehicle seatback. The "X's" mark cargo hooks, which must not be mistaken for tether anchors.

Do not confuse the cargo hooks for tether anchors. Always check the vehicle owner's manual to determine if unmarked hardware is a cargo hook or tether anchor.



An unmarked tether anchor on the bottom of a vehicle seat



A marking with a symbol and words on a tether anchor's cover flap



Tether anchor marking above tether anchor



Tether anchor under carpet slit with marking

Car Seat Parts

Car seat parts of LATCH are called lower anchor attachment systems and tethers.

In Canada, the Universal Anchorage System (UAS) consists only of the lower anchor attachment system. The tether is referenced separately.

- All car seats equipped with a lower anchor attachment system must also have an option for installation using a seat belt.
- Always check the car seat instruction manual to learn how to use its lower anchor attachment system and tether.

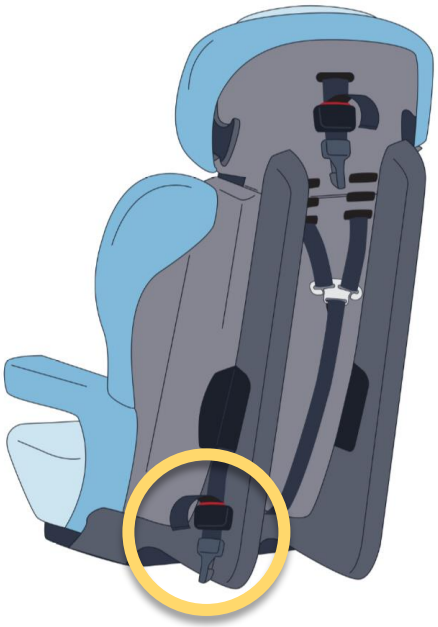
MARKINGS

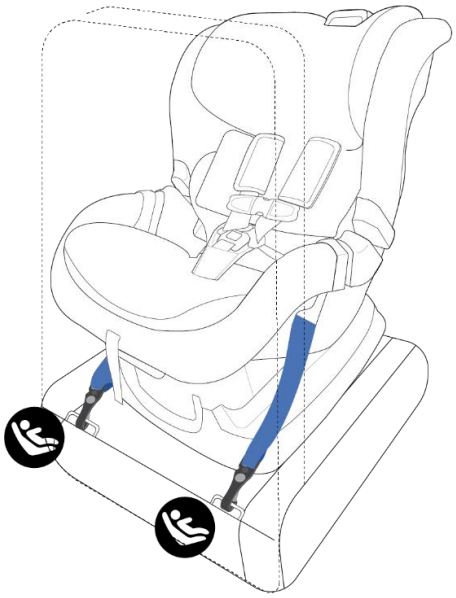
- Lower anchor attachment systems and tethers are sometimes marked in the U.S., but the marking on the car seat parts is not required.

Canadian regulations require a car seat's lower anchor connector locations to be marked with the same logo as used in vehicles.

LOWER ANCHOR ATTACHMENT SYSTEMS

- Lower anchor attachment systems are a permanent set of parts on a car seat or booster seat used to secure it to a vehicle's lower anchors.
- Lower anchor attachment systems may be used for rear-facing or forward-facing installations.
- Lower anchor attachment system designs vary but all have two lower anchor connectors that connect onto the vehicle's lower anchors.





Rear-facing installation using lower anchors



Forward-facing installation using lower anchors and tether

Lower anchor attachment systems can be:

Flexible

- Flexible, having lower anchor connectors at the ends of adjustable webbing that is tightened with a lower anchor adjuster(s). Flexible lower anchor attachment systems are the most common type.



Flexible lower anchor attachment system with hook style connectors



Flexible lower anchor attachment system with push-on style lower anchor connectors

Rigid

- Rigid, having lower anchor connectors attached directly to the car seat without the use of webbing.



Rigid lower anchor attachment system with push-on style lower anchor connectors

The hook and push-on style lower anchor connectors are the most common types. Other styles that are unique to specific car seat manufacturers also exist.

Lower Anchor Attachment System Use

The heavier, thicker part of a lower anchor connector should go over the lower anchor bar, never under it.









- Typically, only one lower anchor connector may be attached to a single lower anchor.



- Using both the lower anchor attachment system and the seat belt for the same installation is acceptable only if allowed by both the car seat and vehicle manufacturers.

TECH TIP

Many push-on styles of lower anchor connectors have words and/or arrows to show which side should be upward.

In the past, some car seat and vehicle manufacturers did not provide guidance on how to install the car seat in the vehicle once the child exceeded the weight limit of the lower anchors. For this reason, if no information is given in both the car seat and vehicle owner's manuals, and the child weighs more than 40 lbs. (more than 18 kg), **Transport Canada** recommends that a forward-facing car seat be installed using both the UAS and vehicle seat belt together with the tether.[1]

Lower Anchor Attachment System Storage

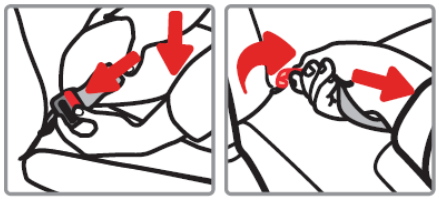
Follow the car seat manufacturer's instructions to store the lower anchor attachment system when not in use.



Lower anchor connector and webbing, stored

[1] Visit **tc.canada.ca/en/road-transportation/defects-recalls-vehicles-tires-child-car-seats/reminder-it-s-important-properly-install-child-car-seats** for more information.

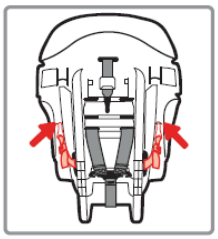
12



To Remove Lower Anchor Belt from Vehicle Lower Anchor Bars:

Remove tension from the belt by pushing down on side of car seat with the belt adjuster. Then press the adjuster button to loosen belt.

Unhook from anchor by squeezing spring lever on hook, pushing hook back into the seat bight, and twisting. Then pull it out of the vehicle seat.



Storing Lower Anchor Belt:

Thread the lower anchor belt through the Forward-Facing belt path. Then attach the hooks to storage attachments, as shown.

Gently pull free end of belt to remove slack.

Page from car seat instruction manual showing how to store lower anchor connectors

Weight Limits for Using Lower Anchor Attachment Systems

Unlike with seat belts, weight limits must be considered when using lower anchors.

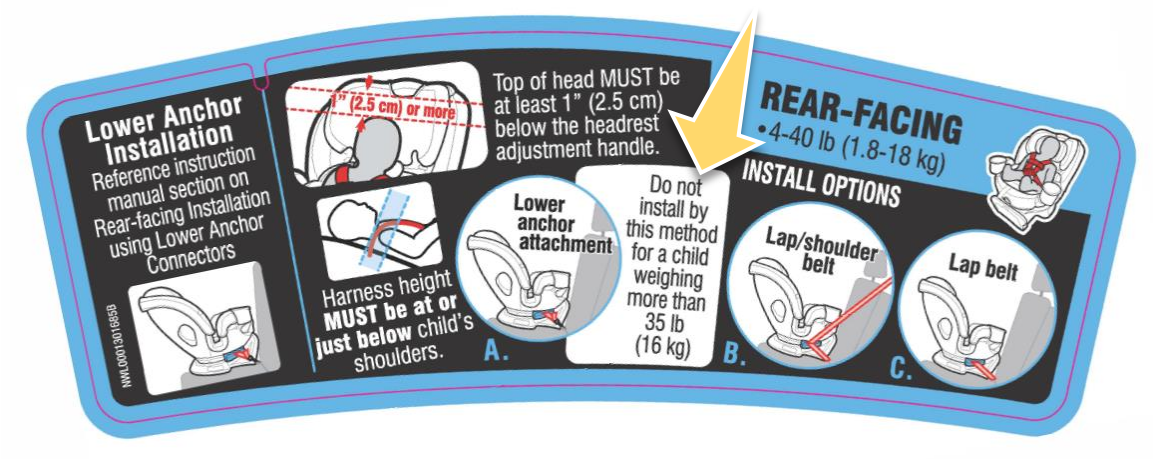
Since February 2014, FMVSS 213 requires car seat manufacturers to calculate a child weight limit for using a car seat's lower anchor attachment system for installation.

- Use of the lower anchor attachment system for car seat installation is allowed only when the combined weight of the child plus the car seat is not over 65 lbs. (29.5 kg).



- If a child exceeds the weight limit for installation using the lower anchor attachment system, a seat belt must be used to install the car seat.
- Car seat manufacturers usually apply these weight limits to their models sold in Canada, too.

- The standardized child weight limit for use of the lower anchor attachment system must appear near the required pictogram on the car seat label for use of lower anchors and in the car seat instruction manual.



  - If this information is not present on the car seat label, it may be because:
    - The combined highest weight limit for the car seat's harness use plus the weight of the car seat is less than 65 lbs. (29.5 kg).
    - The car seat may be made prior to February 2014 and may be expired.
    - The car seat is manufactured for use in Canada.

Car seats may have different weight limits for use of the lower anchor attachment system in the rear-facing and forward-facing modes due to rounding rules in the Federal standard.

- Although some vehicle owner's manuals give weight limits for lower anchors, focus on the car seat manufacturers' standardized weight limit guidance for use of lower anchor attachment systems.
  - These weight limits have been federally required on car seats in the U.S. so that, when followed, use of lower anchors is safe in any vehicle.

Example of Car Seat Label

Label shows modes of use with lower anchor attachment system weight limits.



The absence of a weight limit means that the child weight limit for this car seat in the rear-facing mode installed with the lower anchor attachment system is the highest use weight of 40 lbs. (18 kg).

The child weight limit for this car seat in the forward-facing mode installed with the lower anchor attachment system is 55 lbs. (24.9 kg).

TECH TIP

When educating the caregiver of a child who will soon outgrow the use of the lower anchor attachment system, use of a seat belt for installation should be considered instead. The caregiver may prefer to use the seat belt rather than keep track of their child's weight.

"BORROWING" LOWER ANCHORS FOR CENTER SEATING POSITIONS

Borrowing refers to the use of the inboard lower anchors from the outboard seating positions to install a car seat in a rear center vehicle seating position.

Some vehicle and car seat manufacturers allow borrowing of lower anchors when a rear center seating position does not have a dedicated pair of lower anchors.



In this vehicle, there are no lower anchors dedicated to the center seating position.



Rear-facing car seat installed in a rear center seating position, borrowing the lower anchors from the outboard seating positions

How to Determine if Borrowing Lower Anchors is Allowed

Vehicles

- Check the vehicle owner's manual for permission to borrow and other details including:
  - The distance between the two lower anchors that would be used when borrowing.
  - How borrowing affects the use of outboard seating positions for other occupants.
    - For example, if a lower anchor is borrowed for a center seating position, the lower anchors become unusable for installing a car seat in the outboard seating position and access to the seat belt buckle may be blocked.

212 SAFETY

Frequently Asked Questions About Installing Child Restraints With LATCH		
What is the weight limit (child's weight + weight of the child restraint) for using the LATCH anchorage system to attach the child restraint?	65 lbs (29.5 kg)	Use the LATCH anchorage system until the combined weight of the child and the child restraint is 65 lbs (29.5 kg). Use the seat belt and tether anchor instead of the LATCH system once the combined weight is more than 65 lbs (29.5 kg).
Can the LATCH anchorages and the seat belt be used together to attach a rear-facing or forward-facing child restraint?	No	Do not use the seat belt when you use the LATCH anchorage system to attach a rear-facing or forward-facing child restraint. Booster seats may be attached to the LATCH anchorages if allowed by the booster seat manufacturer. See your booster seat owner's manual for more information.
Can a child seat be installed in the center position using the inner LATCH lower anchorages?	Yes	You can install child restraints with flexible lower anchors in the center position. The inner anchorages are 16 inches (400 mm) apart. Do not install child restraints with rigid lower anchors in the center position.

Vehicle instructions that allow borrowing

Car Seats

- Always check the car seat instruction manual for permission to borrow lower anchors for a center seating position installation, even if the vehicle manufacturer allows it.
- Some car seat manufacturers that allow installations with lower anchor bars spaced wider than the standard 11 inches (28 cm) set a limit for how far apart the borrowed lower anchor bars may be.
  - Compare the number with the figure given in the vehicle owner's manual for the distance between the lower anchors.

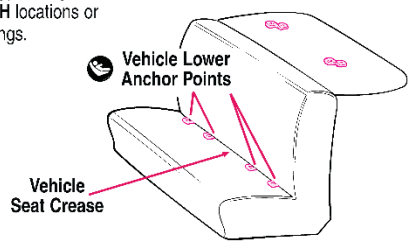
6.3 LATCH Locations

Newer vehicles may have one or more seating positions with **LATCH** anchorage systems. If vehicle is equipped with **LATCH**, the vehicle lower anchor points may be visible at the vehicle seat crease. If not visible, they may be marked with the symbol .

See your vehicle owner's manual for exact locations, anchor identification, and requirements for use with an infant restraint.

LATCH lower vehicle anchor points are defined as 11 inches from the center of one **LATCH** anchor to the center of another **LATCH** anchor. If allowed by your Vehicle Owners Manual, the center seating position maybe used if the anchor spacing is 11" or greater.

Typical seat in a passenger vehicle. Other vehicle types may have different **LATCH** locations or different markings.



Car seat instructions that allow borrowing

Borrowing Lower Anchors for Center Seating Position

STEP 1 Does the vehicle manufacturer allow the borrowing of lower anchors in the rear center seating position?

YES ↓

NO ↓

STEP 2 Does the car seat manufacturer allow use of lower anchors that are spaced more than 11 inches (28 cm) apart?

YES ↓

NO ↓

STEP 3 If the car seat manufacturer specifies a maximum space between borrowed lower anchors, are the borrowed lower anchors within this allowed distance?

YES ↓

NO ↓

BORROWING IS ALLOWED

You may install the car seat in the center seating position using the inboard lower anchors from the outboard seating positions.

Lower anchor weight limits still apply.

BORROWING IS NOT ALLOWED

You may not install the car seat in the center seating position using borrowed lower anchors. For an installation in the center seating position, you must use the seat belt to install a car seat.



If you are unable to determine whether borrowing is allowed by the car seat or vehicle manufacturer, use the seat belt to install a car seat in a rear center seating position.

TECH TIP

If a caregiver seems disappointed when borrowing lower anchors is not allowed, remind them that installations using a seat belt or lower anchors are different but either method is safe when all instructions are followed.

TETHERS

A tether is a car seat part that consists of webbing with a standardized tether hook used to secure the top of a car seat to the vehicle's tether anchor. Tethers are most often used for forward-facing installations but may also be used for some rear-facing installations.

- Tethering a forward-facing car seat can reduce the distance that a child's head moves forward in a frontal crash by four to six inches (10 to 15 cm).[2,3]
- Tethering may also make the car seat installation more stable and improve the outcome in any type of crash.



Tether designs vary but all have a standardized hook on a length of webbing that is tightened and loosened using an adjuster.



The webbing is usually attached to the car seat at a single point. This is a straight tether.



Less often, the webbing is attached to two points on the car seat and the tether hook is free sliding. This type is commonly referred to as a V-shaped tether.

2 Brown J, Kelly P, Griffiths M, Tong S, Pak R, Gibson T. The performance of tethered and untethered forwarding child restraints. IRCOBI Bron, France. 1995:61–74.

3 Legault F, Gardner W, Vincent A. The effect of top tether strap configurations on child restraint performance. SAE Technical Paper 973304; SAE International. 1997.

Forward-Facing Car Seats

- In the U.S., it is best practice to tether forward-facing car seats whenever possible for both seat belt and lower anchor attachment system installations.
  - Some car seat manufacturers always require the use of a tether or require the use in certain situations.

In Canada, by Federal requirements, a tether is always required for the installation of forward-facing car seats.

Rear-Facing Car Seats

- For a few car seats, use of the tether when the car seat is installed rear-facing is allowed.
- Check the car seat instruction manual for the models that allow this practice.
  - There are a variety of ways specified for routing and attaching the tether.
- Also check the vehicle owner's manual for allowable routing and attachment of the tether.
  - A few vehicle manufacturers prohibit certain methods of tethering.



In Canada, rear-facing car seats are not required to be designed with a tether. Some manufacturers have them on their car seats that can be installed rear-facing and require their use.

Tether Use

A tether is designed to work with a seat belt or lower anchor attachment system to protect an occupant.

A tether must never be used alone to install a car seat.



Forward-facing car seat incorrectly secured using only a tether

- Always use the tether anchor for the seating position where the car seat is being installed.

- Most tethers are connected so the webbing lies flat, and the heavy part of the tether hook goes over the tether anchor.



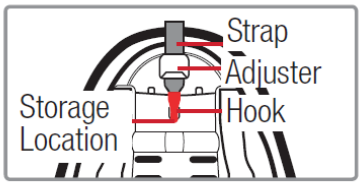


- Instructions for some vehicles require a half-twist in the tether webbing, so the heavier part of the tether hook goes under the tether anchor. Contact the car seat manufacturer if uncertain if adding a half-twist to the tether webbing is allowed.

Tether Storage

Follow the car seat manufacturer's instructions to store the tether when not in use.

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Tether Storage and Parts

Storing Tether Strap

When installing rear facing or when not in use, attach the tether hook to its storage attachment on the back of the shell as shown.

Gently tighten to remove slack.

Car seat instruction manual showing tether storage instructions

Tether Routing and Head Restraints

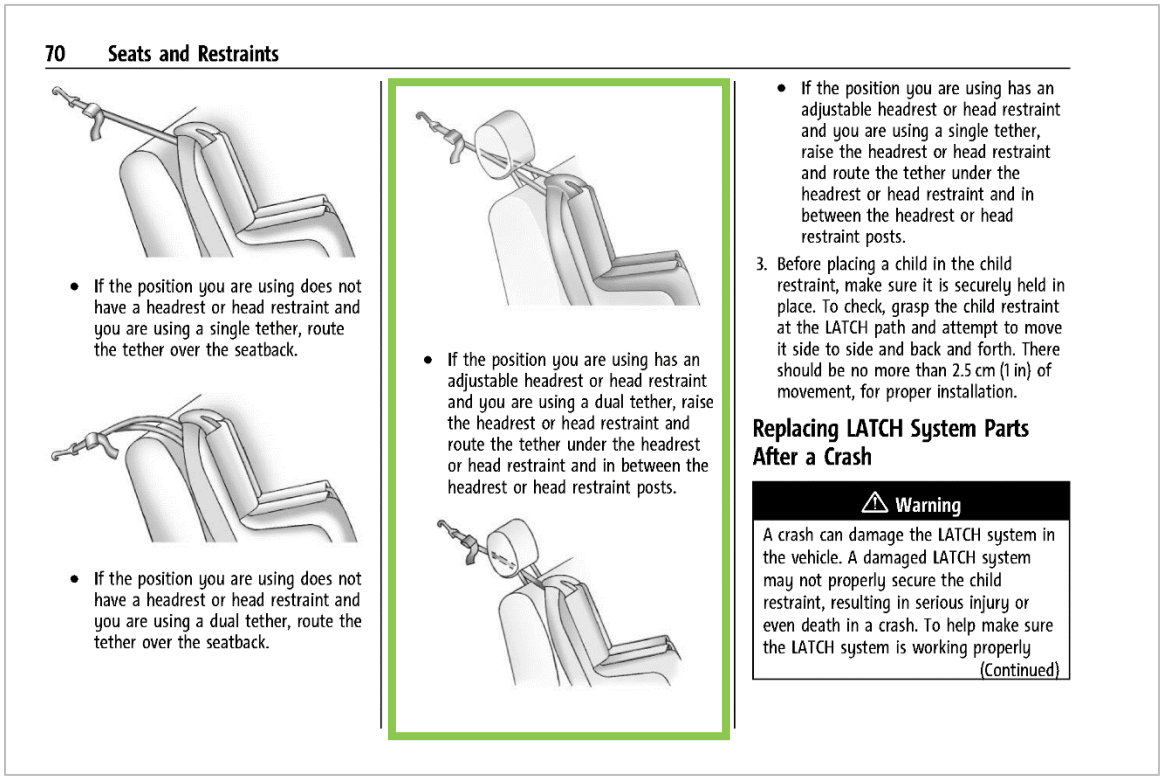
Typically, a tether is routed from the car seat to the appropriate tether anchor following as straight of a path as possible. Routing is often dependent upon whether the tether is a straight or V-shaped type.

Always remember to check the vehicle owner's manual for model-specific instructions for routing a tether, especially with respect to head restraints.

TECH TIP

While the general public often says head rest, CPSTs and other safety professionals use the term head restraint to stress that this vehicle part exists primarily to protect occupants in a crash.

- If a head restraint can be raised, vehicle owner's manuals most often say to route the tether under it, going between the posts.



70 Seats and Restraints

- If the position you are using does not have a headrest or head restraint and you are using a single tether, route the tether over the seatback.

- If the position you are using does not have a headrest or head restraint and you are using a dual tether, route the tether over the seatback.

- If the position you are using has an adjustable headrest or head restraint and you are using a dual tether, raise the headrest or head restraint and route the tether under the headrest or head restraint and in between the headrest or head restraint posts.

- If the position you are using has an adjustable headrest or head restraint and you are using a single tether, raise the headrest or head restraint and route the tether under the headrest or head restraint and in between the headrest or head restraint posts.

3. Before placing a child in the child restraint, make sure it is securely held in place. To check, grasp the child restraint at the LATCH path and attempt to move it side to side and back and forth. There should be no more than 2.5 cm (1 in) of movement, for proper installation.

Replacing LATCH System Parts After a Crash

⚠ Warning

A crash can damage the LATCH system in the vehicle. A damaged LATCH system may not properly secure the child restraint, resulting in serious injury or even death in a crash. To help make sure the LATCH system is working properly

(Continued)

Page from vehicle owner's manual showing raising of head restraint to route tether webbing

- Some vehicle owner's manuals say to remove the head restraint when a tether is used.
  - Check the car seat instruction manual to see if the car seat may be used without the support of the head restraint.
  - Encourage caregivers to store removed head restraints.
    - Any object that is not secured during a crash may collide with occupants possibly causing serious or fatal injuries.
  - Remind caregivers to replace the head restraints when the car seat is no longer installed in that seating position.
- Some head restraints cannot be moved or removed, which sometimes makes tether use challenging.
  - Follow the vehicle and car seat manufacturers' instructions for routing the tether webbing over or next to the head restraint.



Routing of straight tether under vehicle head restraint



Routing of a V-shaped tether around vehicle head restraint

Weight Limits for Using Tethers

Tether anchor weight limits are not regulated in the U.S.

TECH TIP

Vehicle owner's manuals will include information about tether use. Other terms that vehicle manufacturers use to refer to tethers include top tethers and top straps.

Vehicles

Always check the vehicle owner's manual for tether use information.

- A few vehicle manufacturers limit the use of tether anchors to a child weight of 65 lbs. (29.5 kg) minus the weight of the car seat.
- Most vehicle manufacturers defer to the car seat manufacturer for tether anchor use limits.
- Some vehicle owner's manuals make no mention of tether anchor weight limits.

80 Seats and Restraints

Recommended Methods for Attaching Child Restraints

Restraint Type	Combined Weight of the Child + Child Restraint	Use Only Approved Attachment Methods Shown with an X			
		LATCH – Lower Anchors Only	Seat Belt Only	LATCH – Lower Anchors and Top Tether Anchor	Seat Belt and Top Tether Anchor
Rear-Facing Child Restraint	Up to 29.5 kg (65 lb)	X	X		
Rear-Facing Child Restraint	Greater than 29.5 kg (65 lb)		X		
Forward-Facing Child Restraint	Up to 29.5 kg (65 lb)			X	X
Forward-Facing Child Restraint	Greater than 29.5 kg (65 lb)				X

Tether use weight recommendations from a vehicle owner's manual

Car Seats

Always check the car seat instruction manual for tether use information.

- Most car seat manufacturers strongly recommend the use of a tether with forward-facing car seats when a tether is provided.
- Some car seat manufacturers always require the use of a tether or require the use in certain situations.
  - These instructions cannot be ignored because of vehicle weight limits.
  - Contact the car seat manufacturer for advice if a conflict exists.

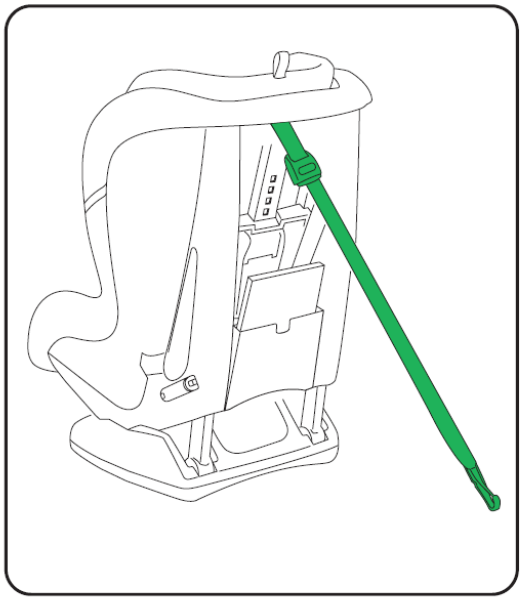
Unless prohibited due to weight limits by a manufacturer, NHTSA recommends use of the tether whenever a car seat is installed forward-facing.

In Canada, by Federal requirements, a tether is always required for the installation of forward-facing car seats.

3) TOP TETHER: The top tether is an additional strap attached at the top of the Primo Viaggio Convertible shell equipped with a hook and an adjuster.
Peg Perego always recommends the use of the top tether. It is a device designed to increase stability in normal use and improve safety in an accident.
The top tether has to be connected to a suitable tether attachment points in the vehicle.

Do not attach the Primo Viaggio Convertible Tether to vehicle anchorage points not designed as child restraint tether anchorage points, as this may result in a failure during a crash.

Important! maximum weight for top tether use is 65 lbs (30 kg).



Page from car seat instruction manual with tether use recommendation and weight limit

LEARN • PRACTICE • EDUCATE—LOWER ANCHOR AND TETHER USE WEIGHT LIMITS

Practice educating a caregiver about how to determine lower anchor and tether use weight limits.

Where do you find this information?

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

Tether Anchors and Pickup Trucks

Due to the limited cab space in many pickup trucks, it is especially important to tether forward-facing car seats in these vehicles to protect children.

- The use of tethers in pickup trucks can be more challenging than in other vehicles.
  - The limited space behind the rear seats of pickup trucks leads to tether anchor designs and routing that look very different when compared to those in other vehicles.
  - Always check the vehicle owner's manual for correct use, being careful to follow the instructions for the pickup truck's cab style.





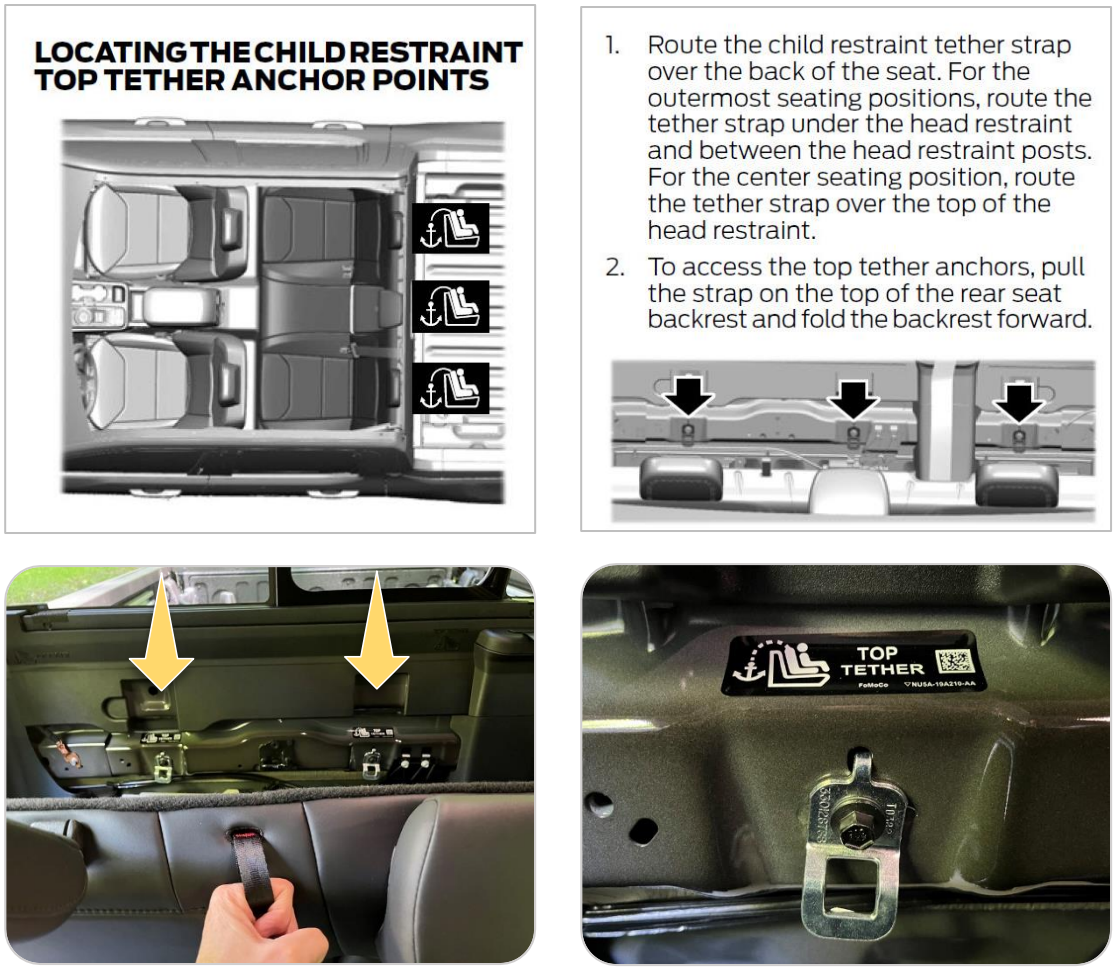
- There are two general types of pickup truck tether systems:
  - Direct routing
  - Indirect routing

Direct Routing Tether Systems

In a direct routing tether system, the tether routes directly from the car seat to a tether anchor behind the vehicle seat following as straight of a path as possible.

- Direct routing tether systems are found in both small and large pickup trucks.
- Though this is similar to direct routing tether systems in other vehicles, attaching the tether can be more challenging in pickup trucks because the vehicle seatback is close to the vehicle's back wall.
  - The tether anchor might be located on the wall, seat, floor or vehicle seat leg of the pickup truck.
- Often, the vehicle seatback must be folded forward—and sometimes the vehicle seat cushion also lifted—to access the tether anchor.

- Make sure the vehicle seat is securely locked back in place after folding it forward.



Images from 2024 Ford Maverick vehicle owner's manual (first row) and photos taken inside the vehicle (second row), showing location of tether anchors behind the rear seat.

Indirect Routing Tether Systems

In an indirect routing tether system, the tether first goes through a router that is behind the vehicle seat and then turns to attach to a tether anchor located elsewhere, often behind an adjacent vehicle seat.

- Indirect routing tether systems are found in both small and large pickup trucks.



Example of indirect routing in a pickup truck

Router Design and Function

Router designs vary widely. The two general types are:

- **Closed Loops**: Closed loops are made of various materials including webbing or wire. With this type of router, the tether hook and tether adjuster must be able to fit through the opening in the loop.
  - In some closed loop-style indirect routing tether systems, the routers also serve as tether anchors.
  - In other systems, the tether runs through a closed loop-style router to a tether anchor that is a metal ring, bar or plate.
  - With closed loop-style indirect routing tether systems, it is possible that two tethers, one from each of two car seats, will be attached to the same tether anchor.



Wire loop

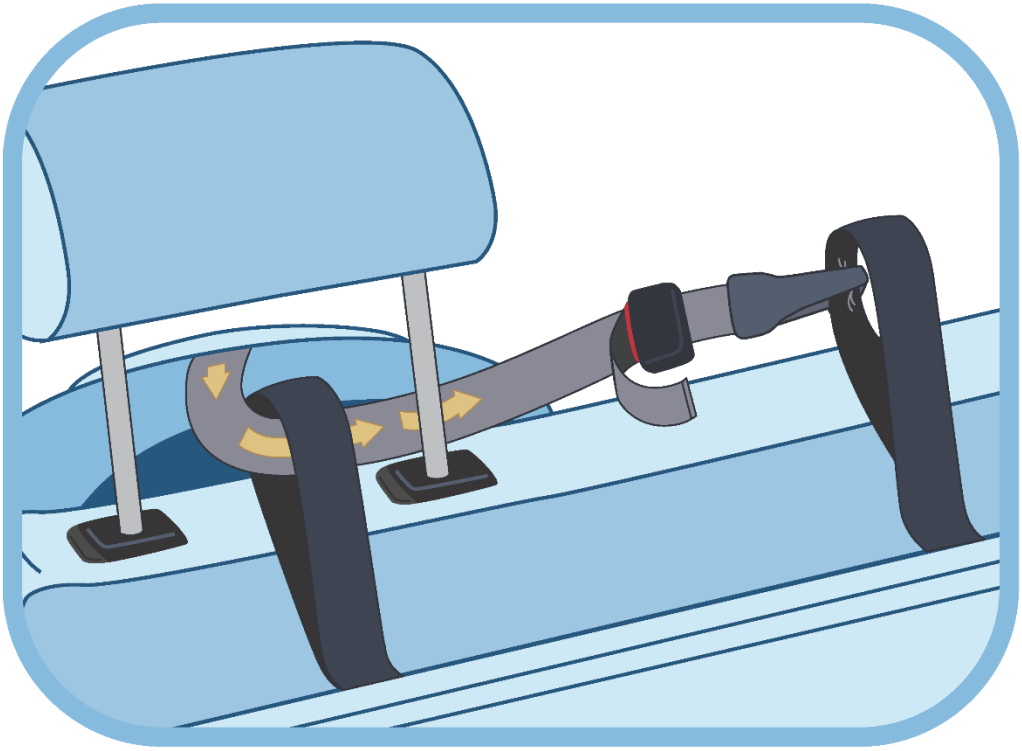


Webbing loop (with metal ring)

Open Wire: This type of router is used by sliding the webbing behind a wire, so there is no concern about whether the tether adjuster can pass through the router.



Open wire



This drawing, from a viewpoint looking through the back window, shows tethering using an indirect routing tether system with a dual-loop design. The tether routes through a loop behind the car seat (the router) and hooks to a loop behind the adjacent vehicle seat (the tether anchor). After attachment, the tether should be tightened.

Car Seat Incompatibility

Sometimes certain car seats and the tether routing systems in pickup trucks are incompatible.

- Common reasons are:
  - The tether is too short.
  - The tether adjuster is too bulky to fit through a closed loop-style router.



- Fixes may be available, such as getting 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 about fixes for an incompatibility.



Tether extender

Educating Caregivers about Lower Anchors and Tethers

Seat Belt or LATCH/UAS + Tether? BOTH are Safe.

Seat belts and LATCH/UAS and tether are both safe ways to install a car seat. Select the method that results in the best installation the caregiver can do in their vehicle when following both the vehicle and car seat manufacturers' instructions.







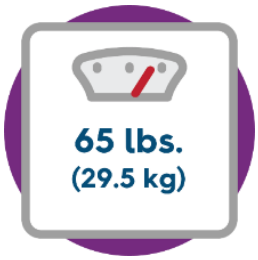
Caregivers may want to install their car seat with lower anchors and the seat belt at the same time because they believe it is safer for their child.

In the U.S., using the lower anchors and a seat belt for the same installation is acceptable only when allowed by both the car seat and vehicle manufacturers.

In the past, some car seat and vehicle manufacturers did not provide guidance on how to install the car seat in the vehicle once the child exceeded the weight limit of the lower anchors. For this reason, if no information is given in both the car seat and vehicle owner's manuals, and the child weighs more than 40 lbs. (more than 18 kg), **Transport Canada** recommends that a forward-facing car seat be installed using both the UAS and vehicle seat belt together with the tether.



Lower Anchor Weight Limits



Weight limits must be followed when using a lower anchor attachment system to secure car seats.

When to Use a Tether





United States: Forward-facing car seats should be tethered whenever possible.

Canada: By Federal requirements, a tether is always required for the installation of forward-facing car seats.

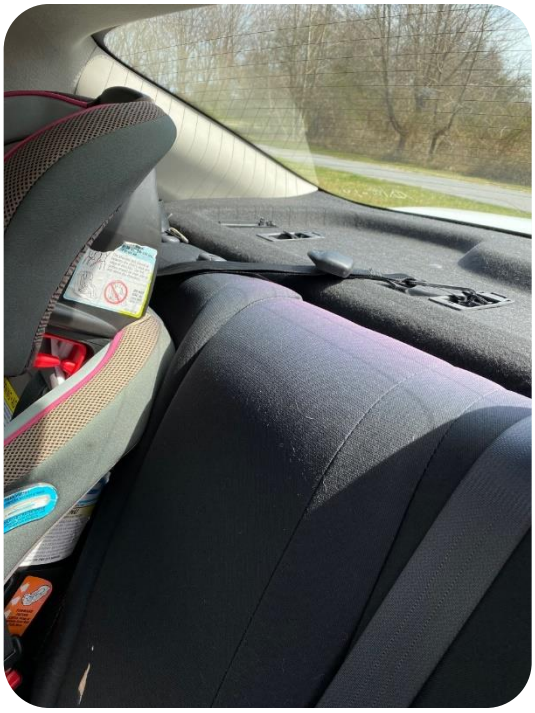
Practice • Spot Misuse

Can you spot lower anchor and tether misuse in these photos? Write your observation beneath the image. You will find an answer key in the Appendix.













Progress Check

1 **Why is tether use so important?**

TG PAGE(S) ↓

2 **Which forward-facing installation method is safer: LATCH/UAS with tether or seat belt with tether?**

TG PAGE(S) ↓

3 **Explain three possible reasons why borrowing of the inboard lower anchors of outboard LATCH/UAS positions may not be allowed.**

TG PAGE(S) ↓

4 **A family arrives to have their car seat checked. The car seat label states that the car seat can be used for a child up to 65 lbs. (29.5 kg).**

The label also indicates a maximum child weight of 40 lbs. (18 kg) for using the lower anchor attachment system to install the car seat. The vehicle manual says to follow the car seat instructions for lower anchor use.

At what child weight must the seat belt be used to install the car seat instead of the lower anchor attachment system?

TG PAGE(S) ↓

MODULE VIDEOS

- Lower Anchor Connectors: Hook Style (Flexible Lower Anchor Attachment System)
- Lower Anchor Connectors: Push-On Style (Flexible Lower Anchor Attachment System)
- Lower Anchor Connector: Push-On Style (Rigid Lower Anchor Attachment System)
- Borrowing Lower Anchors Introduction
- Borrowing Lower Anchors—Example
- Borrowing Lower Anchors—Review the Steps
- Direct Tether Routing in a Pickup Truck
- Tethering in Pickup Trucks—Ram
- Tethering in Pickup Trucks—Honda Ridgeline
- LATCH Challenges—Technicians in the Field



ACTIVITY—LOCATE LOWER ANCHOR AND TETHER ANCHOR INFORMATION IN VEHICLE OWNER'S MANUALS

Using two vehicle owner's manuals, look up and document the lower anchor and tether anchor information.

	Vehicle #1		Vehicle #2	
1. What is the vehicle make, model and year?				
2. What pages discuss lower anchors and tethers?				
3. How many seating positions have lower anchors?				
4. If the rear center seating position does not have a dedicated set of lower anchors, is borrowing of lower anchors allowed?	YES	NO	YES	NO
5. Are lower anchor symbols found?	YES	NO	YES	NO
6. How many seating positions have tether anchors?				
7. Are tether anchor symbols found?	YES	NO	YES	NO
8. Is a maximum child weight indicated for tether use?	YES	NO	YES	NO
If so, what is the max weight?	_____		_____	

ACTIVITY—LOCATE LOWER ANCHORS AND TETHER ANCHORS IN VEHICLES

1. Looking in the rear seating positions of three vehicles, locate and document the number of seating positions with seat belts, lower anchors and tether anchors.
2. Note information found on the lower anchor and tether anchor markings.

	Vehicle #1	Vehicle #2	Vehicle #3
1. What is the vehicle make, model and year?			
2. How many seat belts are in rear seating positions?			
3. How many seating positions have lower anchors?			
4. Are the lower anchors marked? ▪ If so, what do the markings say and/or look like?	YES NO	YES NO	YES NO
5. How many seating positions have tether anchors?			
6. Are the tether anchors marked? ▪ If so, what do the markings say and/or look like?	YES NO	YES NO	YES NO

7

Overview of Car Seat and Booster Seat Use

In this module, we will answer:



- What are the U.S. Federal standards and Canadian regulations related to car seats and booster seats?
- What are NHTSA's and Transport Canada's car seat and booster seat recommendations?
- How do caregivers select an appropriate car seat or booster seat?
- How do I know if a car seat or booster seat has a recall or is expired?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

adaptive car seat/booster seat
all-in-one car seat
carrier
combination car seat
compliance testing
convertible car seat
conventional car seat/booster seat
detachable base
developmental level
Ease-of-Use Ratings
expiration date
forward-facing only car seat
infant car seat
label
National Safety Mark (NSM)
non-approved product
recall
registration card
shell

ABOUT THIS MODULE

This module serves as an introduction to car seats and booster seats. More detailed information is provided in upcoming modules.

Types of Conventional Car Seats and Booster Seats

This training focuses on the use of conventional car seats and booster seats—ones that are readily available to caregivers from a local or online retailer. Types of conventional car seats include the following:

Infant Car Seats

An infant car seat with a 5-point harness is designed for use by an infant or young child in a semi-reclined, rear-facing position.

Typically, an infant car seat consists of a carrier and a detachable base. A few models do not have a detachable base. Some infant car seats have rotating features.

Car seat manufacturers sometimes refer to infant car seats as rear-facing only car seats.



Convertible Car Seats

A convertible car seat with a 5-point harness is designed for use by an infant or young child.

A convertible car seat has rear-facing and forward-facing modes of use.

Some convertible car seats have rotating features.



Forward-Facing Only Car Seats

A forward-facing only car seat with a 5-point harness is designed for forward-facing use by an older child.



Combination Car Seats

A combination car seat is designed for use by an older child.

A combination car seat has a forward-facing mode used with a 5-point harness and a booster mode used with a lap-and-shoulder belt.

Other terms that car seat manufacturers sometimes use to refer to combination car seats include booster car seats, harness booster seats and harness-to-booster car seats.



All-in-One Car Seats

An all-in-one car seat is designed for use by an infant, young child or older child.

An all-in-one car seat has rear-facing and forward-facing modes used with a 5-point harness and a booster mode used with a lap-and-shoulder belt.

Some all-in-one car seats have rotating features.

Other terms that car seat manufacturers sometimes use to refer to all-in-one car seats include 3-in-1 and 4-in-1 car seats.



Booster Seat

A booster seat is designed for use by an older child.

A booster seat is a high-back or backless seat used with a lap-and-shoulder belt.

Booster seat manufacturers sometimes refer to booster seats as belt-positioning booster seats.





U.S. Federal Standards and Canadian Regulations for Car Seats and Booster Seats

UNITED STATES

FMVSS 213	FMVSS 213a	FMVSS 213b
Car seats and booster seats manufactured **prior to December 5, 2026**, for use in the U.S. must meet the performance and labeling requirements of **NHTSA's Federal Motor Vehicle Safety Standard (FMVSS) 213**.	Car seats and booster seats manufactured **on or after June 30, 2025**[1], for use in the U.S. either by children less than 40 pounds (18 kg) regardless of height, or by children less than 43.3 inches (110 cm) regardless of weight, must meet the performance requirements of **NHTSA's FMVSS 213a – Child Restraint Systems – Side Impact Protection.**	Car seats and booster seats manufactured **on or after December 5, 2026**[1], for use in the U.S. must meet the performance and labeling requirements of **NHTSA's FMVSS 213b**. **FMVSS 213 will sunset (end) when FMVSS 213b becomes mandatory.**

For more information on FMVSS related to child passenger safety, visit nhtsa.gov/laws-regulations and search Regulations/Vehicle Safety by the topic of Child Passenger Safety.

CANADA

All car seats and booster seats manufactured for use in **Canada** must meet the performance and labeling requirements of Transport Canada's Motor Vehicle Restraint Systems and Booster Seats Safety Regulations (RSSR).

For more information on Transport Canada's RSSR, visit **tc.canada.ca/en/corporate-services/acts-regulations/motor-vehicle-restraint-systems-booster-seats-safety-regulations-sor-2010-90**.

[1] These dates are subject to change.

SELF-CERTIFICATION OF CAR SEATS AND BOOSTER SEATS

In the U.S. and Canada, manufacturers must self-certify that their car seats and booster seats meet the requirements of the country in which they will be sold.

Examples of these requirements include the following:

- Material flammability
- Width of harness webbing
- Amount of force needed to open the buckle
- Lower anchor attachment system is present
  - Lower anchor attachment systems are not required for booster seats. Some booster seat manufacturers add them to their products voluntarily.
- Car seat passes a 30 mph (48 km/h) frontal sled test.



Sled test

In Canada, car seat manufacturers also must apply for, and affix, the National Safety Mark (NSM) to their seats so that they can be sold legally.



LABELING

Permanent, visible labels must be placed on the car seat or booster seat including the following information:

- Manufacturer name
- Model name or model number
- Date of manufacture
- Child weight and height limits for each mode of use
- Basic instructions for correct installation for each mode of use
- Air bag warning label for car seats that can be used rear-facing
- In the U.S., statement on whether the car seat conforms to Federal standards for use in aircraft
- In the U.S., the statement which represents the manufacturer's certification with FMVSS 213 (FMVSS 213b):
  - "This child restraint system conforms to all applicable Federal motor vehicle safety standards."

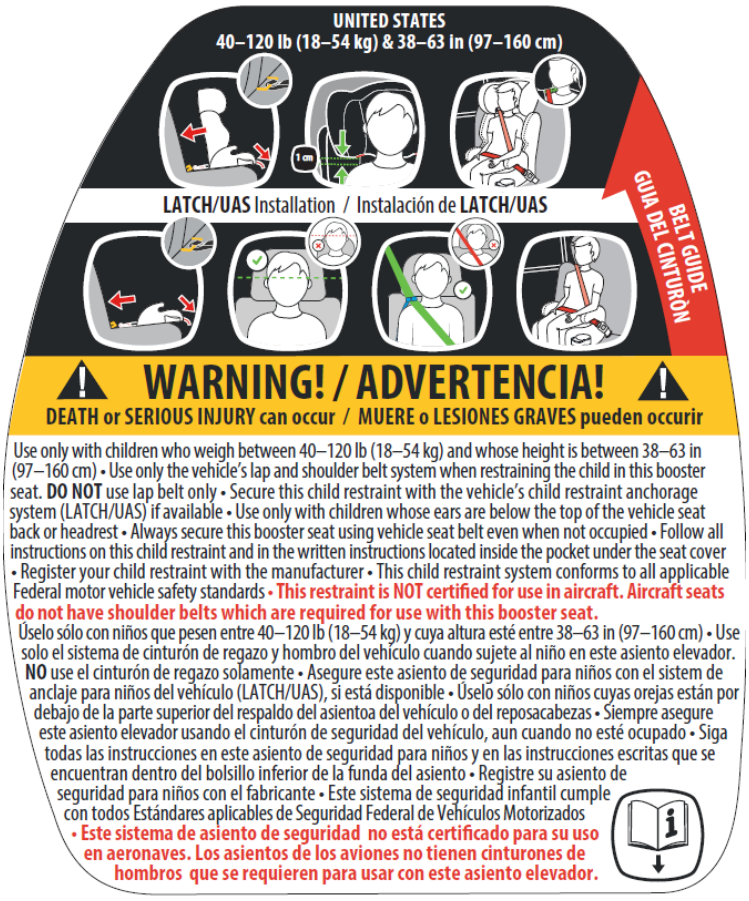


In Canada, car seat and booster seat manufacturers must apply the National Safety Mark—indicating the car seats and booster seats meet Canadian safety standards—for the seats to be imported and sold legally.

- In the U.S., labels are required to be in English.
  - Manufacturers may provide the labels in other languages including Spanish and French.



In Canada, labels are required to be in English and French.



U.S. labeling on booster seat



Canada's National Safety Mark required for all car seats and booster seats

OTHER INTERNATIONAL STANDARDS

In addition to FMVSS 213 (FMVSS 213a and FMVSS 213b) in the U.S. and RSSR in Canada, there are other international standards for car seats and booster seats including:

- United Nations
- Australia/New Zealand
- China
- Brazil
- Argentina

Countries that do not have their own standards may accept products meeting other international standards, such as FMVSS 213 (FMVSS 213a and FMVSS 213b) or United Nations regulations.

All standards have labeling requirements similar to FMVSS 213 (FMVSS 213a and FMVSS 213b) and RSSR.

Label Examples



China Regulator Logo



New Zealand



United Nations



United Nations



Brazil

NONCOMPLIANT CAR SEATS AND BOOSTER SEATS

In the U.S., noncompliant car seats and booster seats are those that do not meet the requirements of FMVSS 213 (FMVSS 213a and FMVSS 213b). In Canada, noncompliant car seats and booster seats are those that do not meet the requirements of RSSR. In both the U.S. and Canada, noncompliant car seats are not allowed to be sold.

- Noncompliant car seats and booster seats may be identified through compliance testing—including visual inspection, public complaints or by the manufacturers themselves.
- Car seats and booster seats that meet the standards for use in other countries may be noncompliant in the U.S. and/or Canada.

Fake Car Seats and Booster Seats

Fake or counterfeit car seats and booster seats do exist.

- Fake car seats and booster seats imitate a specific brand, make and model of a car seat or booster seat.
  - Often fake car seats and booster seats are sold as a less expensive version of a car seat or booster seat.
  - It can be very difficult to tell the difference between a real and fake car seat.
- Fake car seats and booster seats may also be noncompliant because they do not meet the standards for car seats or booster seats in the country in which they are being sold.
- Noncompliant car seats and booster seats can easily be confused with fake car seats and booster seats.
  - Always check for labels that indicate if the car seat or booster seat meets regulatory standards.

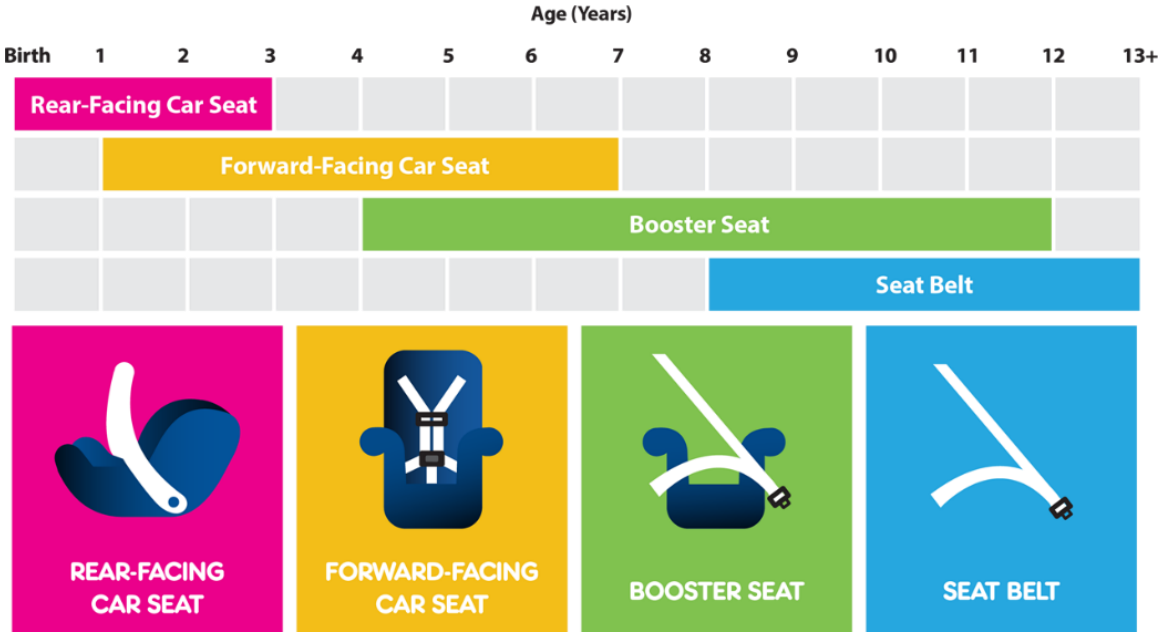
TECH TIP

When educating caregivers about a noncompliant car seat or booster seat, use neutral and factual information.

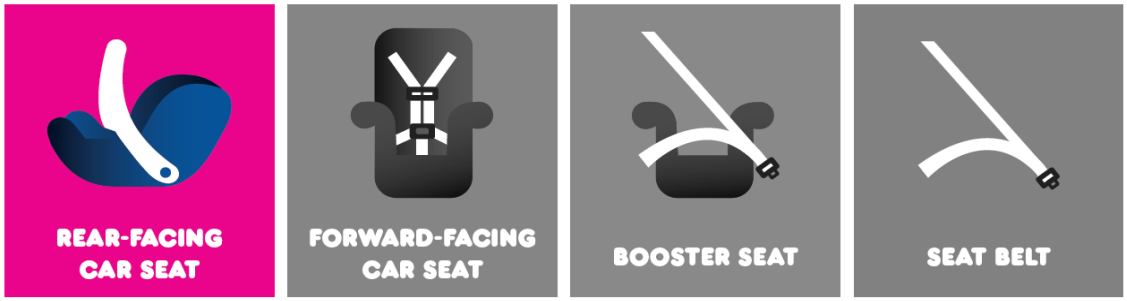
Avoid calling a car seat fake unless you are certain that it is fake.



NHTSA's Best Practice Recommendations

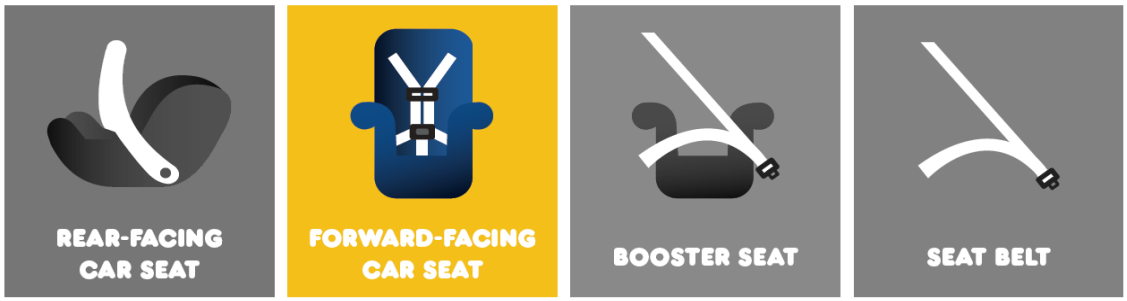


NHTSA's recommendations reflect best practice, promoting car seat and booster seat use for as long as possible based on the following:



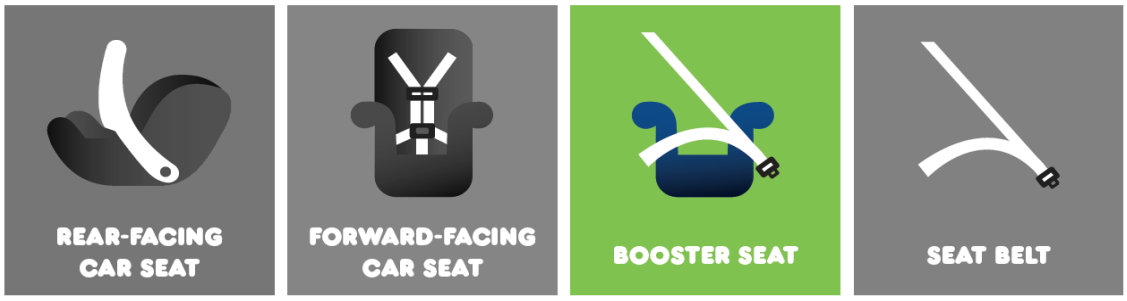
Rear-Facing Car Seat

- **Birth to 12 Months** – Children under the age of one should always travel in a rear-facing car seat with a 5-point harness in the back seat.
- **1 to 3 Years** – Children should travel in a rear-facing car seat with a 5-point harness for as long as possible until reaching the highest weight or height limit allowed by the car seat manufacturer. Once a child outgrows a rear-facing car seat, they are ready to travel in a forward-facing car seat with a 5-point harness in the back seat.



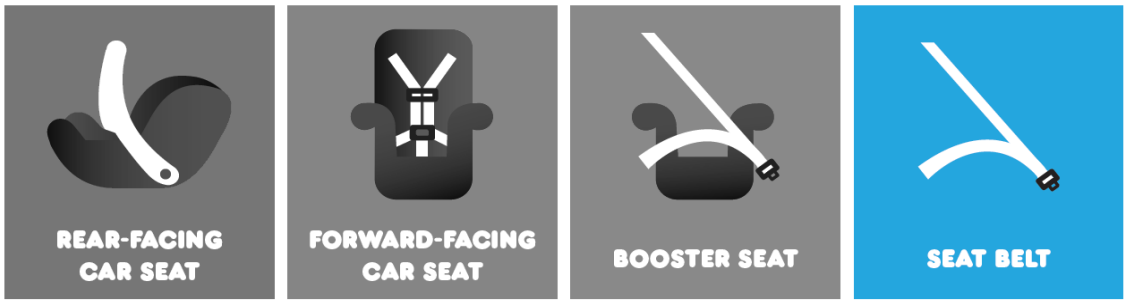
Forward-Facing Car Seat

- **1 to 3 Years** – Children should travel in a rear-facing car seat with a 5-point harness for as long as possible until reaching the highest weight or height limit allowed by the car seat manufacturer. Once a child outgrows a rear-facing car seat, they are ready to travel in a forward-facing car seat with a 5-point harness in the back seat.
- **4 to 7 Years** – Children should travel in a forward-facing car seat with a 5-point harness until reaching the highest weight or height limit allowed by the car seat manufacturer. Once a child outgrows a forward-facing car seat, they are ready to travel in a booster seat, but still in the back seat.



Booster Seat

- **4 to 7 Years** – Children should travel in a forward-facing car seat with a 5-point harness until reaching the highest weight or height limit allowed by the car seat manufacturer. Once a child outgrows a forward-facing car seat, they are ready to travel in a booster seat, but still in the back seat.
- **8 to 12 Years** – Children should travel in a booster seat until they correctly fit in a seat belt. Children should continue to ride in the back seat.



Seat Belt

- **8 to 12 Years** – Children should travel in a booster seat until they correctly fit in a seat belt. Children should continue to ride in the back seat.

NHTSA's recommendations are available at nhtsa.gov/carseat.

TECH TIP

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

Visit the Governors Highway Safety Association's State Laws listing at ghsa.org/state-laws for child passenger safety and seat belt laws for each U.S. state and territory.

Transport Canada's Best Practice Recommendations

Transport Canada recommends staying in each stage as long as possible.



- **Stage 1: Rear-Facing** – Infants and young children should ride rear-facing in a car seat with a 5-point harness until they reach the car seat's highest weight or height limit.



- **Stage 2: Forward-Facing** – Children who have outgrown their rear-facing car seat and weigh at least 22 lbs. (10 kg) may ride forward-facing in a car seat with a 5-point harness until they reach the forward-facing car seat's highest weight or height limit.



- **Stage 3: Booster Seats** – Children who have outgrown their forward-facing car seat and weigh at least 40 lbs. (18 kg) may ride in a booster seat.



- **Stage 4: Seat Belts** – Children who have outgrown their booster seat should use the vehicle seat belt provided that the seat belt fits the child.

Transport Canada's recommendations are available at **tc.canada.ca/en/road-transportation/child-car-seat-safety/choosing-child-car-seat-booster-seat#_the_four_stages**. As these are Transport Canada's recommendations, it is important to check the age, weight or height requirements set out in provincial or territorial regulations.

Five Steps of Correct Use

In the following modules, the five steps of correct use for rear-facing car seats, forward-facing car seats and booster seats will be covered in detail. The five steps are:



Step 1: Selection
Choose the right car seat or booster seat.

Step 2: Direction
Face the car seat or booster seat the right way.

Step 3: Location
Choose an appropriate seating position in the vehicle.

Step 4: Adjustment
Adjust the car seat harness or booster seat to fit the child correctly.

Step 5: Installation
Secure the car seat or booster seat to the vehicle seat.

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**

TECH TIP

Developmental level refers to certain needs, behaviors and capabilities that are common and different for that stage of development.

A child's developmental level may affect their transportation needs.

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 Car Seat Finder

NHTSA's Car Seat Finder is an easy-to-use tool allowing caregivers to compare how easy it is to use certain car seat features so they can make informed decisions when selecting a car seat or booster seat.

NHTSA's Car Seat Finder with ease-of-use ratings is available at nhtsa.gov/campaign/right-seat.

Transport Canada regulates the manufacturers and importers of car seats and booster seats, and does not rate, rank or endorse specific car seats or booster seats.

What is the Best Seat?

CPSTs are often asked, "What is the best car seat or booster seat for my child?"

- The best car seat or booster seat is the one that:



Fits the child



Fits the vehicle



The caregiver can use correctly every time

- Other considerations should be given to the following:
  - The caregiver's budget.
  - Features of the car seat or booster seat that support the specific needs of the family.

TECH TIP

Provide information to help caregivers select a car seat or booster seat, making certain that recommendations are based on the specific needs of the family and features of car seats or booster seats that support those needs.

CPSTs must not make car seat or booster seat recommendations based solely on brand and/or personal preference.

Transporting Children with Specific Transportation Needs

Whenever possible, it is best practice for all children to use a conventional car seat or booster seat if that seat meets the child's transportation needs.

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



- If transportation needs cannot be met by a conventional car seat or booster seat, some children may need to use an adaptive car seat or booster seat, which are obtained through a specialized provider.
- For children with specific transportation needs, appropriate car seat or booster seat selection should be made in collaboration with the child's healthcare team and a CPST who has completed the *Safe Travel for All Children: Transporting Children with Special Health Care Needs* training.



TECH TIP

Safe Travel for All Children: Transporting Children with Special Health Care Needs is an enrichment training available for CPSTs who will be working with children who have specific transportation needs.

More information on this training is found at preventinjury.medicine.iu.edu/adaptive-transportation/safe-travel-for-all-children/adaptive-trainings.

Registering a Car Seat or Booster Seat

Car seat and booster seat manufacturers are required to provide a registration card with all car seats and booster seats.

Caregivers are encouraged to register their car seat or booster seat so they will be notified about safety issues like recalls.

TECH TIP

CPSTs should encourage caregivers to register their car seat or booster seat.

Car seat and booster seat manufacturers can only use this information in the event of a safety notification. Registering a car seat or booster seat will not add a caregiver to a marketing email list.

Methods for registering a car seat or booster seat include the following:

- Complete and mail the postage-paid registration card provided with the car seat or booster seat.
- Scan the QR code on the car seat and complete the registration form.
- Contact the car seat or booster seat manufacturer online or by phone.



Sample car seat registration card to complete and mail to the manufacturer



ATTENTION

Child restraints could be recalled for safety reasons. You must register this restraint to be reached in a recall. Send your name, address and the restraint's model number and manufacturing date to: Peg Perego U.S.A Inc. 3625 Independence Drive, Fort Wayne, IN. 46808 or call 1-800-671-1701, or register online at www.carseat-registration.pegperego.com. For recall information, call the U.S. Government's Vehicle Safety Hotline at 1-888-327-4236 (TTY: 1-800-424-9153). Or go to http://www.NHTSA.gov.

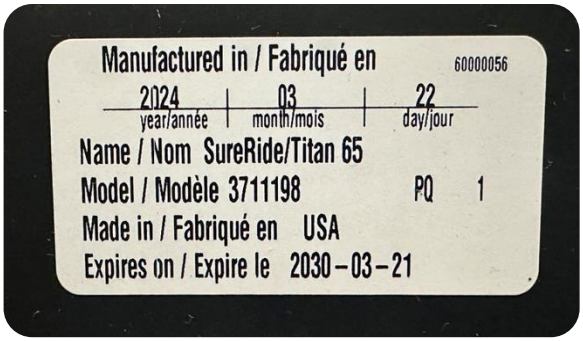
Car seat label with registration information provided

Car Seat and Booster Seat Recalls

Recall investigations of car seats and booster seats may be started in several ways.

- Car seat or booster seat manufacturers may identify a need for a recall through testing or caregiver feedback and report the finding to NHTSA and/or Transport Canada.
- NHTSA and/or Transport Canada may identify issues during compliance testing of car seats and booster seats.
- Caregivers can report a possible problem to NHTSA or Transport Canada, which will then be investigated to determine if there is a need for a recall.

- Car seat and booster seat manufacturers must label their seats with information including the model name or model number and date of manufacture so that recalled car seats and booster seats can be easily identified.
- CPSTs and caregivers should use the labels to determine if a car seat or booster seat has a recall.



Car seat label showing model name, model number and date of manufacture

- A car seat or booster seat missing the label with the model name/model number and date of manufacture may be unsafe to use because recalls cannot be determined.
  - Contact the car seat or booster seat manufacturer if there are any questions about the model name/model number or date of manufacture.
- If the need for a recall is determined, car seat and booster seat manufacturers must offer a remedy for no charge.
- Always follow the car seat or booster seat manufacturer's instructions concerning the recall.

TECH TIP

Take care in communicating recalls to a caregiver. Recalls typically do not require the caregiver to stop using the car seat or booster seat. Most include receiving and installing a repair. Some recalls require using the car seat or booster seat in a specified way until the repair is completed.

UNITED STATES

NHTSA's recall look-up tool is found at **nhtsa.gov/recalls**.

- Select **Car Seat** from the options and then enter the manufacturer name or model name or model number to search for recalls, investigations and complaints about a particular car seat or booster seat.
- Select **Report a Safety Problem** to file a complaint about a particular car seat or booster seat.

The public can sign up to receive general recall alerts via email at nhtsa.gov/recalls.

CANADA

Transport Canada maintains safety alerts and notices at **tc.canada.ca/en/road-transportation/defects-recalls-vehicles-tires-child-car-seats**.

The public can sign up for general recall alerts at **canada.ca/en/services/health/stay-connected/recalls-safety-alerts-mobile-application**.

Active and closed investigations can be viewed at **tc.canada.ca/en/road-transportation/defects-recalls-vehicles-tires-child-car-seats/look-defect-investigations**.

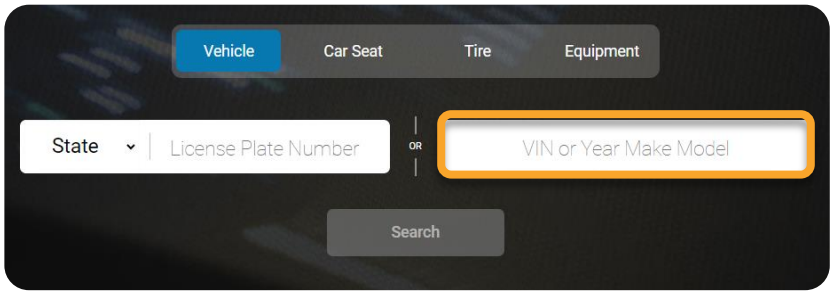
To report a potential safety defect of a car seat or booster seat, fill Transport Canada's online defect complaint at **tc.canada.ca/en/road-transportation/defects-recalls-vehicles-tires-child-car-seats/report-potential-safety-defect-vehicles-tires-child-car-seats** or speak with a defect investigator by calling 1-800-333-0510.

Vehicle Recalls

Caregivers should be encouraged to check for vehicle recalls in addition to car seat or booster seat recalls.

United States

NHTSA's vehicle recall list is found at **nhtsa.gov/recalls.** Select **Vehicle** from the options and use a vehicle's vehicle identification number (VIN) or license plate number to look up recalls. Alternately, a vehicle's year, make and model can be entered in the VIN box.



Canada

Transport Canada's vehicle, tire and car seat recall database can be found at **wwwapps.tc.gc.ca/Saf-Sec-Sur/7/VRDB-BDRV/**.

NDCF

The NDCF incorporates the use of Check to Protect for vehicle recalls in the U.S.

Vehicle recalls can be searched by license plate or VIN at **checktoprotect.org**.

Locate a Vehicle's VIN

Driver's Side Dashboard

The VIN can be found by looking at the dashboard where it meets the windshield on the driver's side of the vehicle from outside the vehicle.

Driver's Door Frame or Side of Door

The VIN is also listed on the vehicle certification label typically found on the driver door frame or on the side of the driver door.

Vehicle Registration Documents

The vehicle's license registration document will have the VIN printed on it.



TECH TIP

NHTSA's free mobile SaferCar app allows caregivers to easily check for car seat, booster seat and vehicle recalls.

When SaferCar discovers a recall for any equipment or vehicle entered, an alert will be sent to the caregiver's phone.

ACTIVITY—LOOK UP CAR SEAT AND VEHICLE RECALLS

Using the information that follows, look up each car seat or vehicle for a possible recall. Note why the car seat or vehicle is recalled and the remedy.

Car Seats

1. **Brand**: Baby Trend

Model Name: Hybrid 3-in-1 Combination Booster Car Seat

Model #: FB49E14A

Date of Manufacture: 12/06/21

☐ YES ☐ NO

Why recalled?

Remedy

2. **Brand**: Clek

Model Name: Ozzi

Model #: N/A

Date of Manufacture: 05/01/21

☐ YES ☐ NO

Why recalled?

Remedy

3. **Brand**: Cybex (Columbus Trading-Partners USA)

Model Name: Aton 2

Model #: 515xxxxxx

Date of Manufacture: 12/29/2019

☐ YES ☐ NO

Why recalled?

Remedy

4. **Brand**: WAYB

Model Name: Pico

Model #: CSTPI-##-001

Date of Manufacture: 04/15/19

☐ YES ☐ NO

Why recalled?

Remedy

Vehicles

1.

Make: Dodge

Model Name: Grand Caravan

Year: 2019

☐ YES ☐ NO

Why recalled?

Remedy

2.

Make: Honda

Model Name: Accord 4 DR FWD

Year: 2017

☐ YES ☐ NO

Why recalled?

Remedy

3.

Make: Ford

Model Name: F-250 Regular Cab

Year: 2016

☐ YES ☐ NO

Why recalled?

Remedy



LEARN • PRACTICE • EDUCATE—RECALLS

Practice educating a caregiver on one of the recalls identified in the activity above.

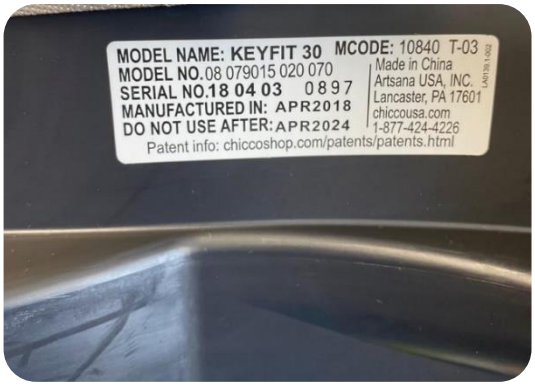
Useful Lives of Car Seats and Booster Seats

NHTSA standards and Transport Canada regulations do not require car seats and booster seats to have expiration dates. However, car seats and booster seats often have limited useful lives identified by their manufacturers and must not be used beyond their stated useful lives or expiration dates.

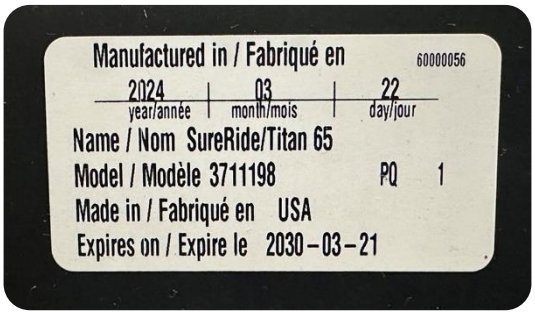
- Some of the reasons considered to determine the useful lives of car seats and booster seats include the following:
  - Updated performance standards
  - Updated labeling requirements
  - Voluntary design improvements
- Expiration dates vary between manufacturers and, possibly, between models of car seats or booster seats made by the same manufacturer.
- Expiration dates can be found in several places on car seats and booster seats including:
  - Stamped in the shell
  - On a label
  - In the car seat or booster seat instruction manual
- Information on useful lives and expiration dates may be found on the car seat or booster seat manufacturer's website in the Frequently Asked Questions (FAQs) section.
- Contact the car seat or booster seat manufacturer for help determining the expiration date of a car seat or booster seat.



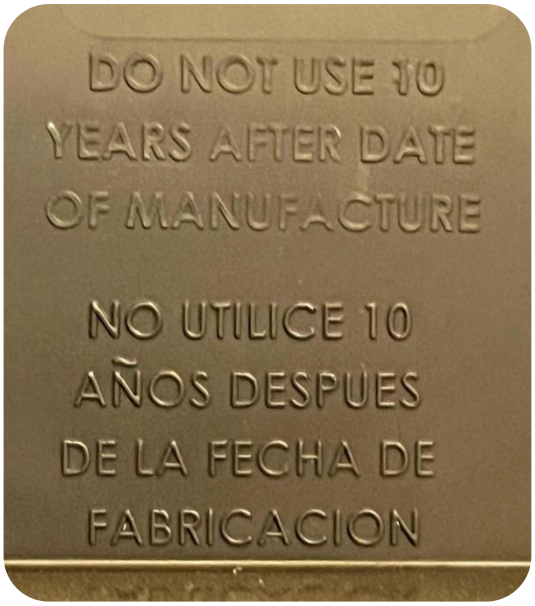
Examples of Car Seat Expiration Dates



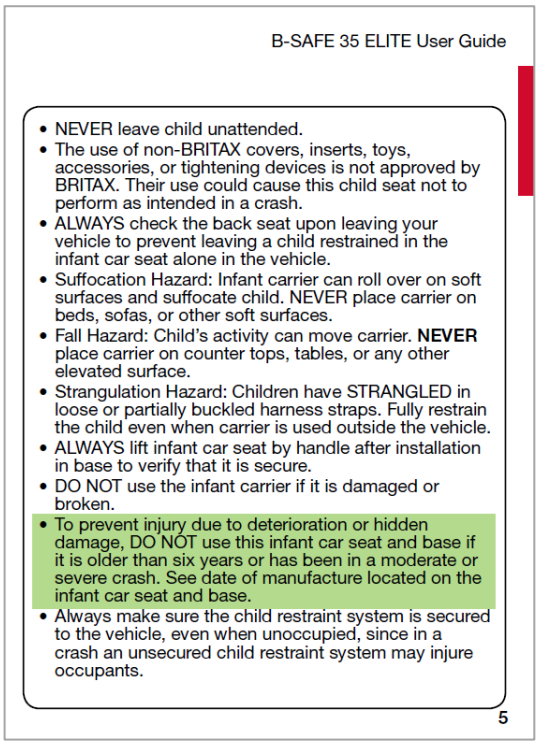




Examples of expiration date printed on car seat labels



Expiration information stamped into car seat shell



B-SAFE 35 ELITE User Guide

- NEVER leave child unattended.
- The use of non-BRITAX covers, inserts, toys, accessories, or tightening devices is not approved by BRITAX. Their use could cause this child seat not to perform as intended in a crash.
- ALWAYS check the back seat upon leaving your vehicle to prevent leaving a child restrained in the infant car seat alone in the vehicle.
- Suffocation Hazard: Infant carrier can roll over on soft surfaces and suffocate child. NEVER place carrier on beds, sofas, or other soft surfaces.
- Fall Hazard: Child's activity can move carrier. **NEVER** place carrier on counter tops, tables, or any other elevated surface.
- Strangulation Hazard: Children have STRANGLED in loose or partially buckled harness straps. Fully restrain the child even when carrier is used outside the vehicle.
- ALWAYS lift infant car seat by handle after installation in base to verify that it is secure.
- DO NOT use the infant carrier if it is damaged or broken.
- To prevent injury due to deterioration or hidden damage, DO NOT use this infant car seat and base if it is older than six years or has been in a moderate or severe crash. See date of manufacture located on the infant car seat and base.
- Always make sure the child restraint system is secured to the vehicle, even when unoccupied, since in a crash an unsecured child restraint system may injure occupants.

5

Example of expiration information in car seat instruction manual

Modifying a Car Seat or Booster Seat

Car seats and booster seats should never be modified or altered. Any change, even minor ones can affect the way a car seat performs in a crash.



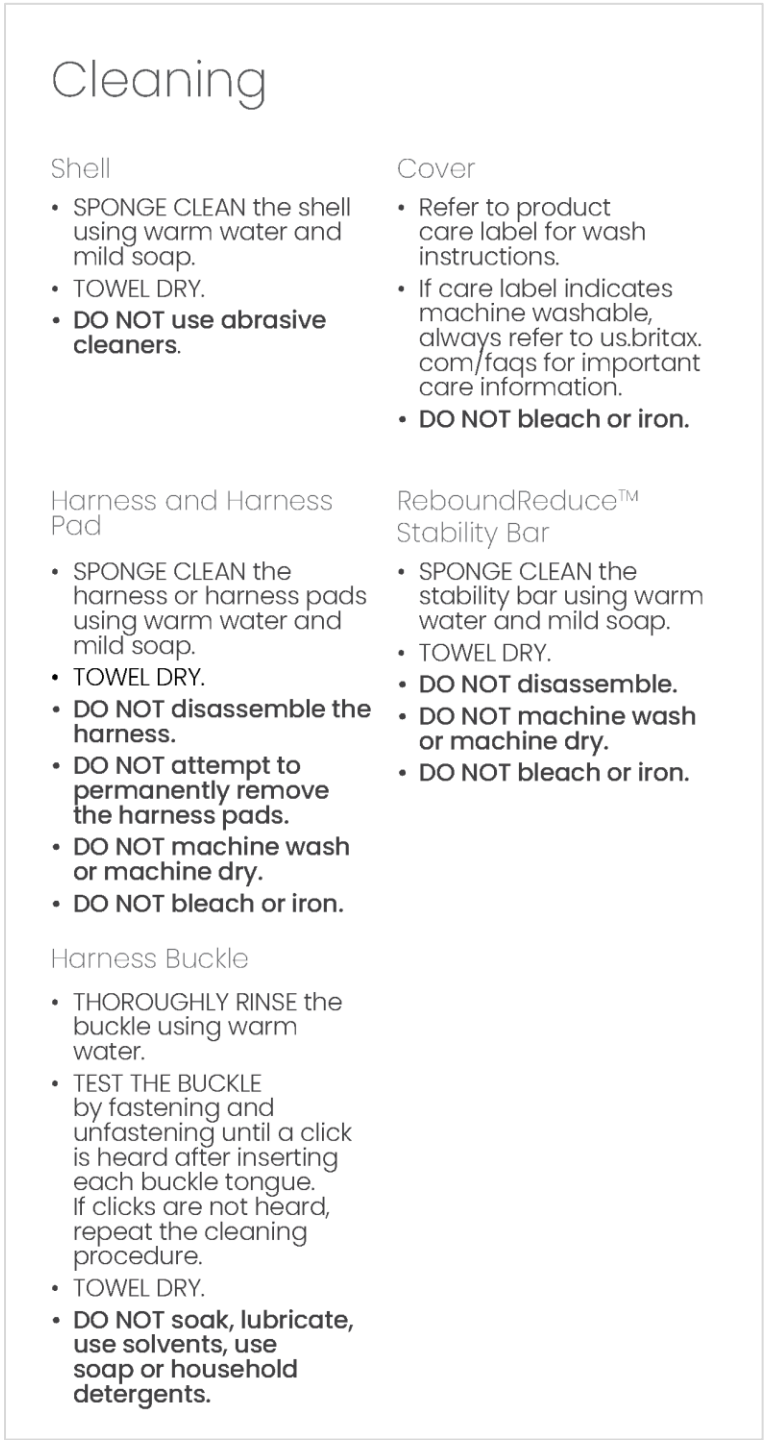
Modified harness



Wood block added to car seat

Cleaning Car Seats and Booster Seats

Caregivers should follow the car seat or booster seat manufacturer's instructions for cleaning.



Cleaning

Shell

- SPONGE CLEAN the shell using warm water and mild soap.
- TOWEL DRY.
- **DO NOT use abrasive cleaners.**

Cover

- Refer to product care label for wash instructions.
- If care label indicates machine washable, always refer to us.britax.com/faqs for important care information.
- **DO NOT bleach or iron.**

Harness and Harness Pad

- SPONGE CLEAN the harness or harness pads using warm water and mild soap.
- TOWEL DRY.
- **DO NOT disassemble the harness.**
- **DO NOT attempt to permanently remove the harness pads.**
- **DO NOT machine wash or machine dry.**
- **DO NOT bleach or iron.**

Harness Buckle

- THOROUGHLY RINSE the buckle using warm water.
- TEST THE BUCKLE by fastening and unfastening until a click is heard after inserting each buckle tongue. If clicks are not heard, repeat the cleaning procedure.
- TOWEL DRY.
- **DO NOT soak, lubricate, use solvents, use soap or household detergents.**

ReboundReduce™ Stability Bar

- SPONGE CLEAN the stability bar using warm water and mild soap.
- TOWEL DRY.
- **DO NOT disassemble.**
- **DO NOT machine wash or machine dry.**
- **DO NOT bleach or iron.**

Sample cleaning guidelines from a car seat instruction manual

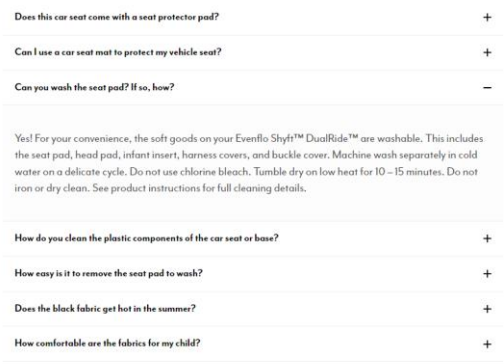
Use of Non-Approved Products

Caregivers should follow the car seat or booster seat manufacturer's instructions when considering use of non-approved products such as inserts, canopy covers, toys and vehicle seat protectors.



Non-approved harness strap covers

Only products allowed by the car seat or booster seat manufacturer for use with a particular car seat or booster seat model are acceptable to use.



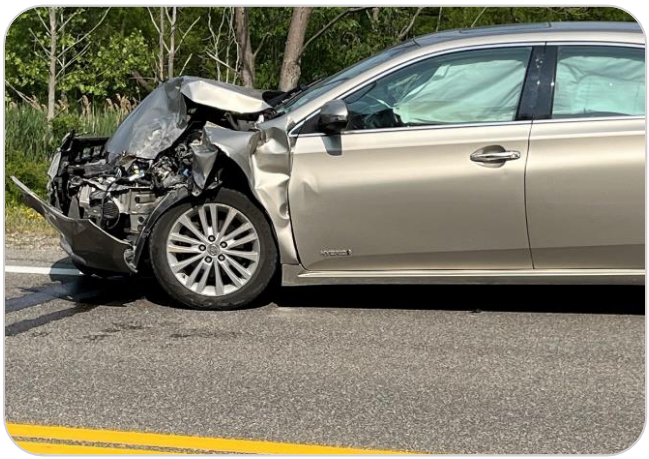
Example of car seat manufacturer's website FAQs

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 or booster seat manufacturer's guidelines for the seat.

Some car seat and booster seat manufacturers require replacement after a crash of any severity.



Check the car seat or booster seat instruction manual for replacement guidelines.

Replacing Car Seats after a Crash

- After a minor crash, replacement recommendations vary by car seat manufacturer.
- Car seats and booster seats always need to be replaced after a moderate or severe crash.
- Caregivers should contact the car seat or booster seat manufacturer with any questions about whether a car seat needs to be replaced after a crash.

Assessing Minor Crash Severity

NHTSA has established the following criteria for assessing minor crash severity.

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 or booster seat is undamaged.	There were no occupant injuries.	Air bags did not inflate.

Transport Canada recommends disposing of any car seat or booster seat in a vehicle during a crash. Even if the car seat or booster seat was not occupied or was not directly hit, it may have been damaged.

TECH TIP

CPSTs should remind the caregiver to discuss options for car seat or booster seat replacement with the vehicle insurance provider after a crash.

Secondhand Car Seats and Booster Seats

The following are questions for the caregiver to consider before using a secondhand or borrowed car seat or booster seat. If each of the statements can be checked off, the secondhand car seat or booster seat may be okay to use.

Checklist for Secondhand Car Seats and Booster Seats

☑	**The history of the car seat or booster seat is known.**
☑	**The car seat or booster seat has never been involved in a moderate to severe crash.**
☑	**The car seat or booster seat has all its parts and appears to be in good working order.**
☑	**The labels are present showing the model name/model number and date of manufacture.**
☑	**The car seat or booster seat is within its useful life—not expired.**
☑	**The car seat or booster seat does not have any recalls, or any recall has been corrected.**
☑	**The caregiver has access to the car seat or booster seat instruction manual.**

TECH TIP

CPSTs cannot guarantee that a secondhand car seat or booster seat with an unknown history is safe to use. Refer caregivers to the Used Car Seat Safety Checklist available at nhtsa.gov/carseat.

Caregiver Decision

The caregiver always makes the final decision on whether to use a secondhand car seat or booster seat.



The role of the CPST is to provide the caregiver with the information needed to make an informed decision.

In Canada under the Canada Consumer Product Safety Act, caregivers cannot advertise, sell or give away car seats or booster seats unless they meet current Transport Canada safety requirements.

Caregivers may need to check with the car seat or booster seat manufacturer to see if their car seat or booster seat meets the technical requirements.

Health Canada recommendations on secondhand car seats and booster seats can be found at **canada.ca/en/health-canada/services/road-safety/second-hand-car-seats**.

Resources for Using Car Seats and Booster Seats

The primary resource for the correct use of car seats or booster seats is the manufacturer of that seat.

- General use guidelines including age, weight and height limits and basic use information are found on the labels on car seats and booster seats.
  - Some manufacturers incorporate the use of QR codes on the labels for caregivers to access online information including instruction manuals and instructional videos.



- Refer to the car seat or booster seat instruction manual for more detailed use information.
  - Some manufacturers have a Frequently Asked Questions (FAQs) section on their website with helpful information in addition to the information found in the car seat or booster seat instruction manual.
- Additionally, car seat and booster seat manufacturers can assist with any issues.
  - Caregivers should be encouraged to contact customer service for the manufacturer.



Most car seat and booster seat manufacturers have CPSTs on staff available to answer questions.

NHTSA Self-Certification Disclaimer

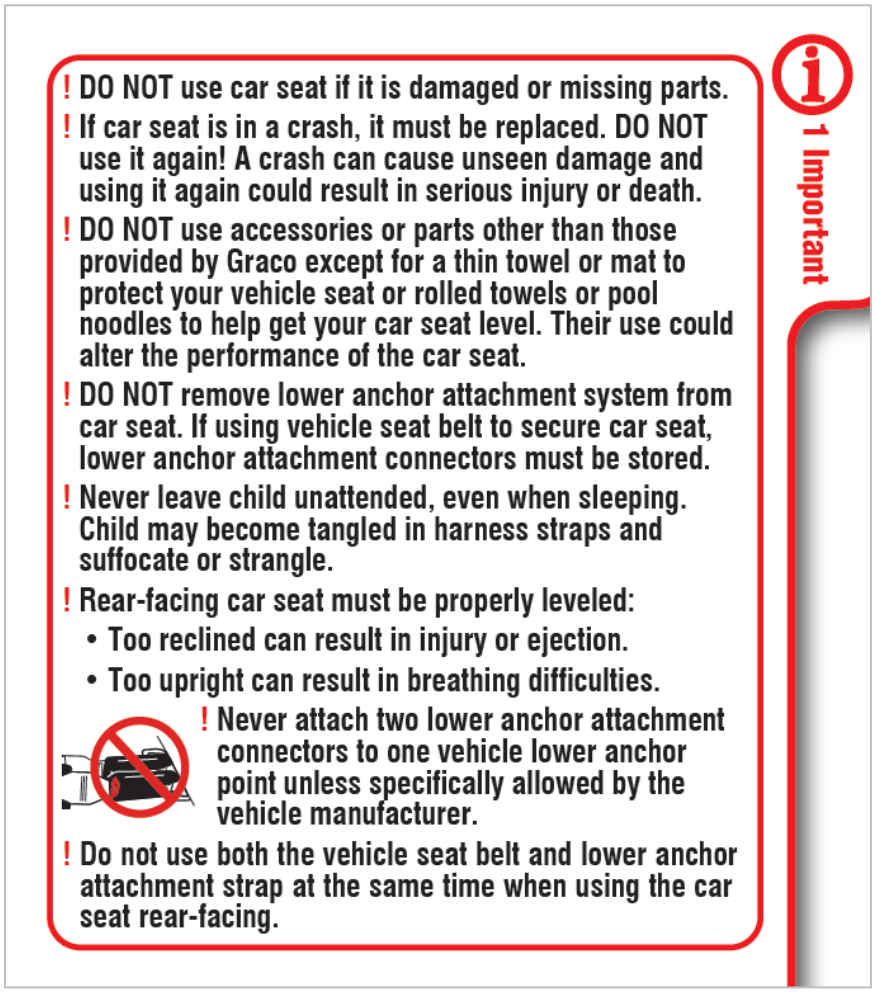
It is important for CPSTs to remember and remind caregivers that the U.S. uses a self-certification system whereby the manufacturers themselves certify the compliance of their child restraint systems (car seats) with the applicable Federal Motor Vehicle Safety Standards (FMVSS). The self-certification process means that neither the Department of Transportation nor NHTSA "approve" any product. NHTSA does enforce the standards by purchasing equipment and vehicles from the marketplace and testing to requirements of the standard at independent test labs. However, not every regulated product available in the marketplace is included in NHTSA's Compliance Testing Programs and not every requirement or claim for a specific product will be evaluated. NHTSA is authorized to conduct any investigation that may be necessary to enforce 49 U.S.C. Chapter 301 and requires a manufacturer to make reports to NHTSA if requested.

Transport Canada Self-Certification Disclaimer

It is important for CPSTs to remember and remind caregivers that Canada uses a self-certification system whereby the manufacturers themselves certify the compliance of their child restraint systems (car seats) with the applicable Motor Vehicle Restraint Systems and Booster Seats Safety Regulations. The self-certification process means that Transport Canada does not "approve" any product. Transport Canada does enforce the standards by purchasing equipment and vehicles from the marketplace and testing to requirements of the standard at independent test labs. However, not every regulated product available in the marketplace is included in Transport Canada's Compliance Testing Program and not every requirement or claim for a specific product will be evaluated. Transport Canada is authorized to conduct any research, studies, evaluations and analyses that the Minister considers necessary for the administration and enforcement of the Motor Vehicle Safety Act and requires a manufacturer to provide records to Transport Canada if requested.

ACTIVITY—FIND CAR SEAT USE INFORMATION

1. Read the following page from a car seat instruction manual and answer the questions.



1 Important

! DO NOT use car seat if it is damaged or missing parts.

! If car seat is in a crash, it must be replaced. DO NOT use it again! A crash can cause unseen damage and using it again could result in serious injury or death.

! DO NOT use accessories or parts other than those provided by Graco except for a thin towel or mat to protect your vehicle seat or rolled towels or pool noodles to help get your car seat level. Their use could alter the performance of the car seat.

! DO NOT remove lower anchor attachment system from car seat. If using vehicle seat belt to secure car seat, lower anchor attachment connectors must be stored.

! Never leave child unattended, even when sleeping. Child may become tangled in harness straps and suffocate or strangle.

! Rear-facing car seat must be properly leveled:

- Too reclined can result in injury or ejection.
- Too upright can result in breathing difficulties.

! Never attach two lower anchor attachment connectors to one vehicle lower anchor point unless specifically allowed by the vehicle manufacturer.

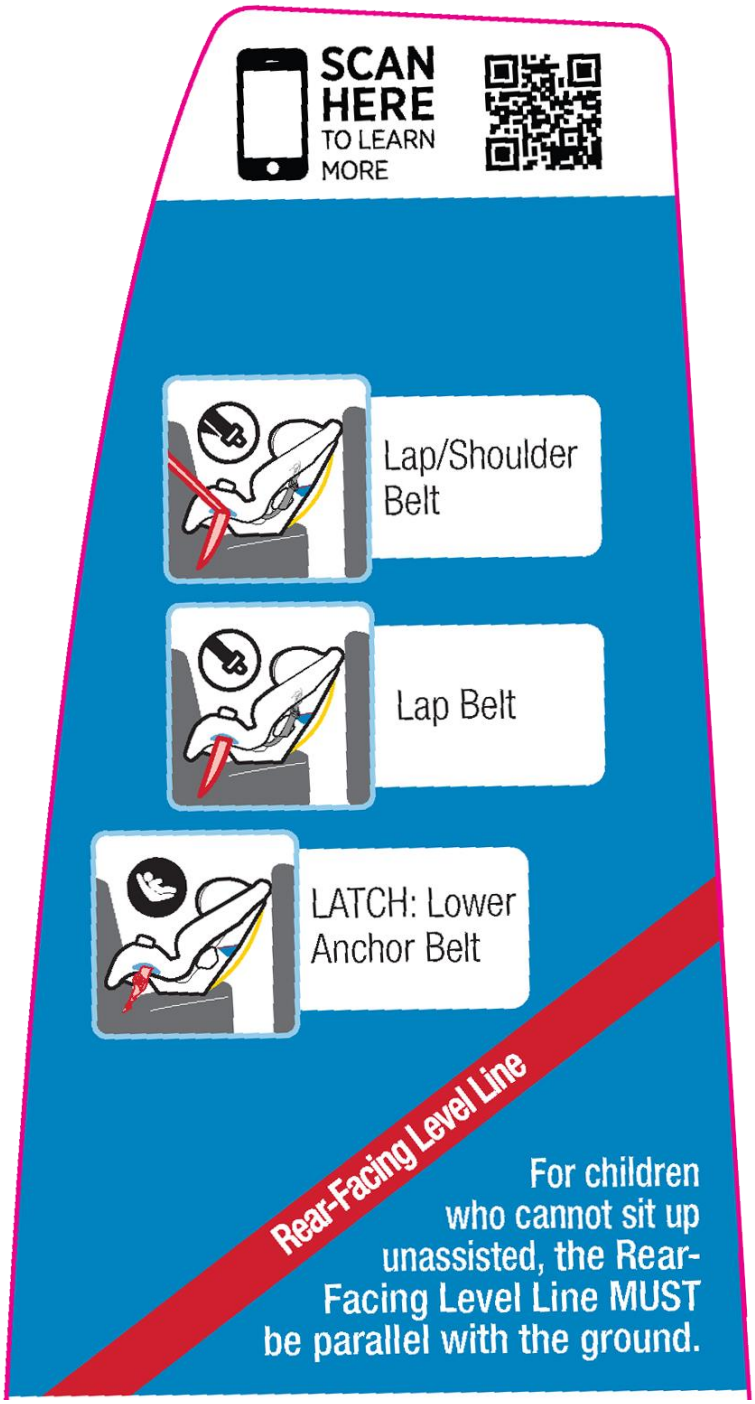
! Do not use both the vehicle seat belt and lower anchor attachment strap at the same time when using the car seat rear-facing.

a. If this car seat is in a crash, does the manufacturer recommend reusing the car seat?

b. What accessories does this manufacturer allow?

c. Can both lower anchors and the seat belt be used to secure this car seat?

2. Use the QR code to discover what videos are available from this manufacturer.



Progress Check

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

TG PAGE(S) ↓

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

TG PAGE(S) ↓

3 What do you do if you cannot find the model name/model number or date of manufacture on the car seat to check for a recall?

TG PAGE(S) ↓

4 What is the primary resource for the correct use of a car seat?

TG PAGE(S) ↓

8

Rear-Facing Car Seats

In this module, we will answer:



- Why should children ride rear-facing?
- What types of car seats have a rear-facing mode of use?
- What are the best practices for rear-facing car seat use?
- What are the steps for correct use of rear-facing car seats?
- How do you identify possible rear-facing car seat misuse?



WORD WATCH

The following terms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

anti-rebound bar/panel
base
buckle slot
buckle webbing
carrier release
carry handle
carry handle adjustment button
chest clip
European belt routing
harness slots
height adjuster
infant loops
insert
load leg
lock-off
lower anchor webbing
pinch test
recline adjustment
recline angle
recline indicator
seat padding
snug harness
splitter plate
tension device

ABOUT THIS MODULE

Rear-facing car seats should be used for children from birth until they reach the highest weight or height limit of the car seat as labeled for use rear-facing.

Why Children Should Ride Rear-Facing

A child's body changes as they grow. Different types of car seats and booster seats are made to support a child's growth.

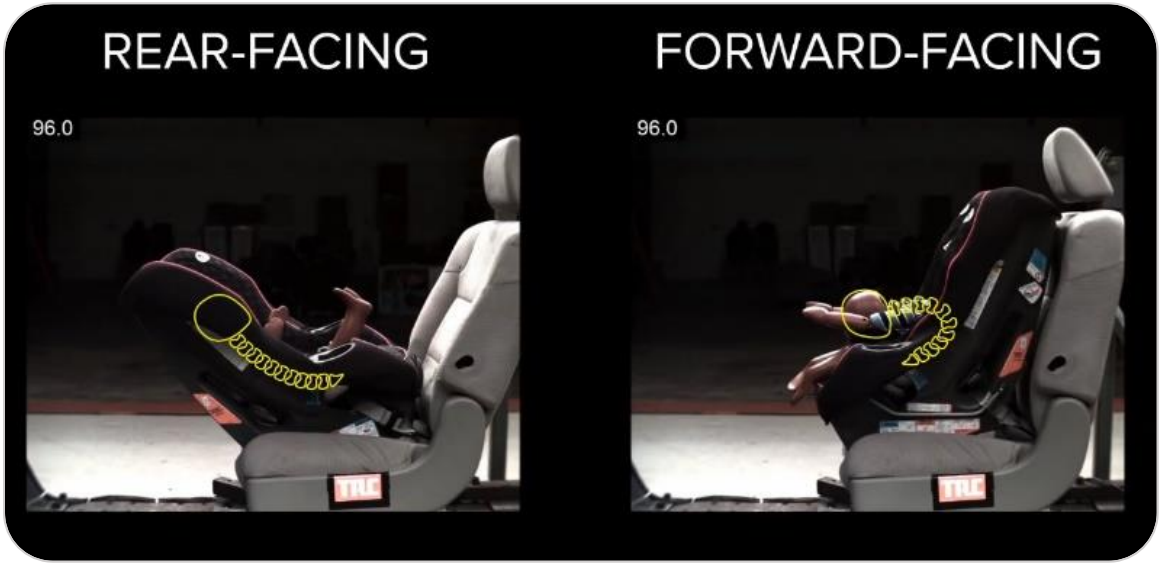
Rear-facing car seats are designed to protect the head, neck and back of an infant or a young child.

- A young child's head is larger and heavier as compared to their body than that of an older child's head and body. Their neck muscles are also less able to support their head.



Keep children rear-facing as long as possible.

- When a child is correctly restrained rear-facing, the head and neck move together with the car seat, allowing the crash forces to be spread across the shell of the car seat, reducing the risk for a brain and/or spinal cord injury.
- Even when an infant or young child is correctly restrained forward-facing, the forces on the neck could lead to severe injury or death.



Rear-Facing Concerns of Caregivers

Caregivers often are worried that their child has outgrown their car seat when their child's feet or legs reach the back of the vehicle seat.

- Because they are flexible, most children can find a comfortable position with their legs crossed or on the back of the vehicle seat.
- After reviewing crash and injury data, the American Academy of Pediatrics determined that children are not at an increased risk for leg injuries rear-facing as compared to forward-facing.[1]
- Additionally, leg injuries can be treated and heal more easily than injuries to the brain and spinal cord, which often cause serious and life-long problems.[1]



Children can sit comfortably while rear-facing.

When working with caregivers, it is important to help them understand the reasons why children are safer when traveling rear-facing in vehicles.

TECH TIP

Suggest ways to ease concerns of the caregiver who wants to see their child while driving. For example, share that children sleep through the night without being under the caregiver's watchful eye.

[1] Durbin, D.R., & Committee on Injury, Violence, and Poison Prevention. (2011). Technical Report—Child Passenger Safety. Pediatrics, Apr 127(4), e1050-66. https://pediatrics.aappublications.org/content/pediatrics/early/2011/03/21/peds.2011-0215.full.pdf

Types of Car Seats with a Rear-Facing Mode

There are three types of car seats that can be used rear-facing.



Infant car seat



Convertible car seat



All-in-one car seat

Always check the labels on the car seat or the car seat instruction manual for the weight and height ranges for rear-facing use.

Caregivers should never use a car seat outside the weight or height limits for that car seat.

INFANT CAR SEATS

Infant car seats must only be used rear-facing.

- Many caregivers choose to use an infant car seat as the first car seat for their infant or young child.

Always check the car seat instruction manual for detailed use guidelines.

Carrier Design

- Typically, an infant car seat consists of a carrier and a detachable base. A few models do not have detachable bases.



Infant car seat with detachable base



Infant car seat used without detachable base

- A detachable base allows a carrier to be snapped in and out without requiring the car seat to be installed each time.
- The carrier can also be installed without the detachable base.

Lower Anchor Attachment System

- If the infant car seat comes with a detachable base, the lower anchor attachment system is found on the detachable base.



Lower anchor attachment system found on detachable base

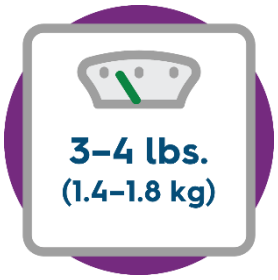


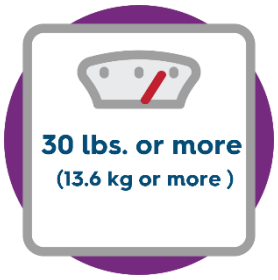
Lower anchor attachment system found on carrier

- If the infant car seat does not come with a detachable base, the lower anchor attachment system is found on the carrier.

Weight Range

- Most infant car seats have a starting weight of 3–4 lbs. (1.4–1.8 kg).
- Most infant car seats can accommodate children to 30 lbs. or more (13.6 kg or more).





CONVERTIBLE AND ALL-IN-ONE CAR SEATS

A convertible or all-in-one car seat used in rear-facing mode is also an appropriate choice for an infant or young child if the child meets the weight and height limits for use of the car seat.



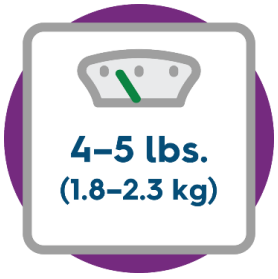
Convertible car seat

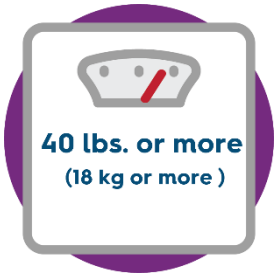


All-in-one car seat

Weight Range

- Most convertible and all-in-one car seats have a starting weight of 4–5 lbs. (1.8–2.3 kg).





- Many convertible and all-in-one car seats can accommodate children up to 40 lbs. or more (18 kg or more) in rear-facing mode.

Convertible and all-in-one car seats have different modes of use. Check the car seat instruction manual for detailed information on using the car seat in rear-facing mode.

TECH TIP

All car seats that can be used rear-facing must have an air bag warning label near the head area.

Best Practice Recommendations

Best practice is for children to ride rear-facing for as long as possible.

A child using an infant car seat may remain rear-facing by transitioning to a convertible or all-in-one car seat used in the rear-facing mode.

The highest weight and height limits of the rear-facing mode for convertible and all-in-one car seats typically are higher than the highest weight and height limits for infant car seats.



LEARN • PRACTICE • EDUCATE—REAR-FACING BEST PRACTICE RECOMMENDATIONS

Practice educating a caregiver on best practice recommendations for transporting children rear-facing in the following scenarios.

- The child is 13 months old and 28 lbs. (12.7 kg). The caregiver would like to see the child while driving and was told by the pediatrician that the child can ride forward-facing.
- The caregiver says, “My friend says that my son can turn forward at age two. Is this true? He still fits in his car seat rear-facing.”

Parts of Rear-Facing Car Seats

It is important to be familiar with the parts of car seats and their functions.



Keep in mind that parts on car seats may look different but serve the same function. Their design may vary by manufacturer and by model. Always check the car seat instruction manual for additional information.

The following diagrams show many of the common parts found on rear-facing car seats. Be sure to look up any of the parts referenced in your **Glossary of Terms** in the Appendix if needed.

INFANT CAR SEAT

Carrier

Front View

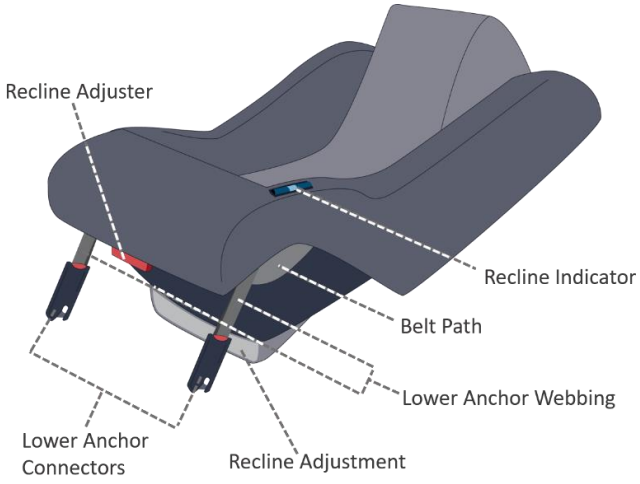


Carrier

Back View



Detachable Base



CONVERTIBLE CAR SEAT

Convertible Car Seat

Front View



Convertible Car Seat

Back View



Parts on an all-in-one car seat are similar to those on a convertible car seat.

RECLINE ANGLE

A rear-facing car seat must be used at the appropriate recline angle for the car seat model as indicated by the car seat manufacturer.

- Car seat manufacturers may allow a range for the recline angle.



- The recline angle on rear-facing car seats is very important.



- Using a car seat that is not reclined enough could cause an infant to have breathing difficulties.
- Over reclining a car seat can put the child at an increased risk of injury in a crash.



Infant car seat that is too upright



Infant car seat that is reclined too far back

- If a car seat has more than one recline position for use in rear-facing mode, a child may sit more upright as they grow and have better head control.



Recline Indicator

The recline indicator is part of the car seat that indicates when the car seat is at the correct recline angle.

Examples of Recline Indicators



Bubble



Color-coding/bubble



Ball



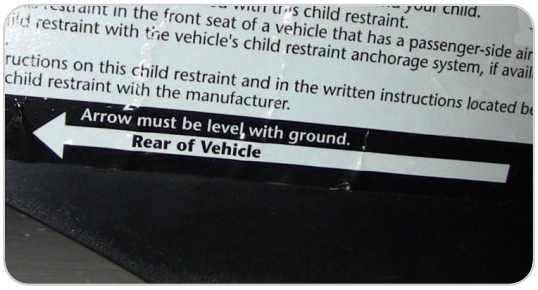
Color-coding/numeric display



Wheel



Arrow stamped into shell



Arrow on label

Recline Adjustment

A vehicle seat's slope may not allow for correct recline angle of the car seat causing the child to ride too upright.

- Many car seats that can be used rear-facing have a recline adjustment that is used to correct the recline angle.
  - Other terms that car seat manufacturers sometimes use to refer to the recline adjustment include adjustable foot and angle adjustment.
  - Car seats that do not have a recline adjustment may need additional support under the car seat at the vehicle seat bight to correct the recline angle if allowed by the car seat manufacturer.

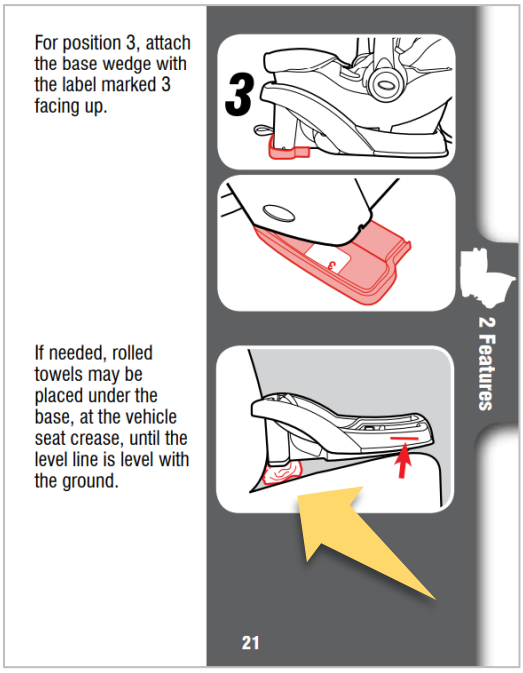


Car seat recline adjustment example

  - Examples of support objects are rolled towels or a pool noodle. Always follow the car seat manufacturer's instructions on approved support objects.



  - Some car seat manufacturers allow the use of either the recline adjustment or a support object but not both.



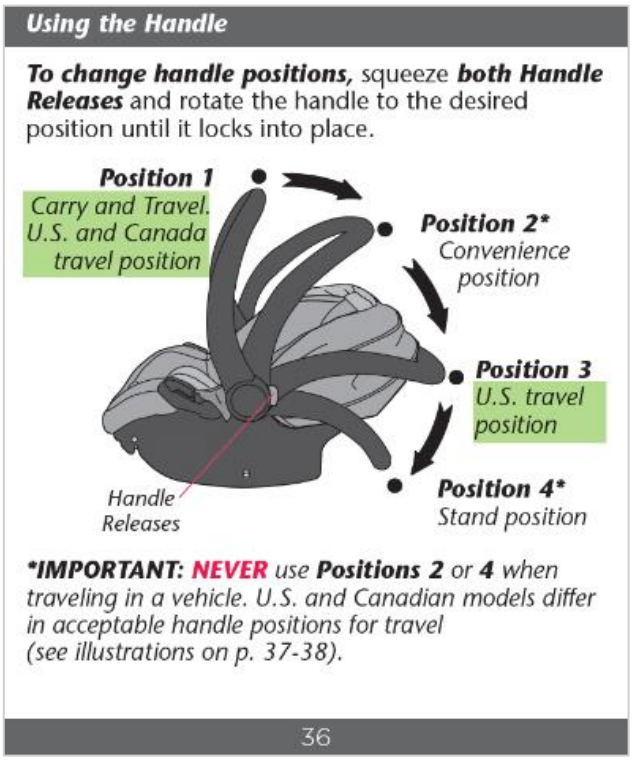
Check the car seat instruction manual for instructions on how to adjust the recline angle.

Carry Handles on Infant Car Seats

Infant car seats have carry handles which must be used in an approved position in the vehicle.

- Typically, the carry handle position is adjusted using the carry handle adjustment button(s) found on the carry handle.
- Always check the car seat instruction manual for the specific car seat model.





Using the Handle

To change handle positions, squeeze ***both Handle Releases*** and rotate the handle to the desired position until it locks into place.

Position 1
Carry and Travel. U.S. and Canada travel position

Position 2*
Convenience position

Position 3
U.S. travel position

Position 4*
Stand position

Handle Releases

****IMPORTANT:* NEVER *use* Positions 2 *or* 4 *when traveling in a vehicle. U.S. and Canadian models differ in acceptable handle positions for travel (see illustrations on p. 37-38).*

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Car seat instructions with U.S.- and Canada-specific carry handle positions for installation when the carrier is being used in the vehicle

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

- If you are unable to use the center rear seating position and have to install this child restraint directly behind a front vehicle seat, ensure that there is at least 38 mm (1.5 inches) of space between any part of the child restraint and the vehicle seat that is closest to the child's head. This space may be necessary for the child restraint to properly perform in certain types of crashes.
- **ONLY** use this child restraint on forward-facing vehicle seats. **DO NOT** use on vehicle seats which face the rear or side.



14



Instructions that do not allow the car seat to touch the vehicle seat in front

- Unless allowed by the car seat manufacturer, toys or other items should not be added to the carry handle.

WARNINGS + GENERAL SAFETY INFORMATION

BEFORE YOU BEGIN

SAFETY WARNINGS:

- **DO NOT** use any accessories, pads or products supplied by other manufacturers with this child restraint, unless approved and tested by UPPAbaby. Items not tested with this restraint could injure your child.
- **DO NOT** place carrier on top of shopping cart. Carrier will not be secure and could fall causing injury to child.
- **ALWAYS** keep child properly harnessed when child is in carrier.
- **ALWAYS** check all surfaces of restraint before securing your child. In warm weather, child restraints can become very hot.
- **ALWAYS** properly store lower anchor connectors when not in use.



Toys should not be added to the carry handle.

ENERGY MANAGEMENT FEATURES

There are several features of car seats that help to manage energy in a crash. Features used may differ by car seat manufacturer and model of car seat. The following are some examples of the energy management features.

Anti-Rebound Bar/Panel

Upon impact, a rear-facing car seat will rotate forward and then rotate back into the vehicle seatback. The motion of rotating back into the vehicle seatback is called rebound.

- An anti-rebound bar/panel is designed to help absorb rebound energy in a frontal crash.
- Anti-rebound bars/panels are generally found on infant car seats, convertible car seats and all-in-one car seats.
- Some car seat manufacturers design the carry handle of an infant car seat to be used as an anti-rebound bar for that car seat.



Infant car seat with carry handle used as anti-rebound bar



Convertible car seat with anti-rebound bar



Infant car seat with anti-rebound panel

- In some cases, the anti-rebound bar/panel is a separate part that requires assembly.

Because there is a rebound requirement **in Canada**, there is often a difference in the use guidelines for the U.S. and Canada. Always check the car seat instruction manual for the correct positioning of the carry handle.

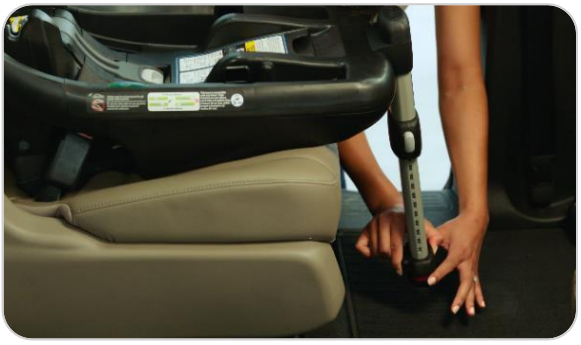
Load Leg

A load leg limits forward rotation in a frontal crash by transferring crash energy down to the vehicle floor rather than to the child.

- Load legs are generally found on infant car seats but may also be found on convertible car seats and all-in-one car seats.
  - Other terms that car seat manufacturers sometimes use to refer to load legs include foot props, stability legs and support legs.
- Load legs extend down from the front of the car seat base and are adjustable to contact the vehicle floor.



Load leg on detachable base



Load leg on detachable base being adjusted to contact the vehicle floor

- When not in use, load legs can be stored under the base of the car seat.



SafeZone™ Load Leg (cont.)

⚠WARNING

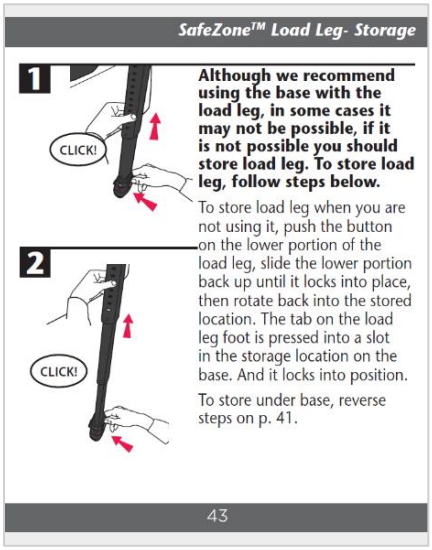
The load leg **MUST** be locked in a locked position and the foot **MUST** be in contact with the vehicle floor.

NEVER place load leg on an uneven floor in the rear of the vehicle. It must always be placed flat on the vehicle floor.

NEVER use the load leg to recline the seat. The ***recline adjustment foot*** on the base is intended to recline the seat.

ALWAYS CHECK to make sure the load leg is locked into the storage compartment in the base when it is not in use.

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SafeZone™ Load Leg- Storage

1

CLICK!

Although we recommend using the base with the load leg, in some cases it may not be possible, if it is not possible you should store load leg. To store load leg, follow steps below.

To store load leg when you are not using it, push the button on the lower portion of the load leg, slide the lower portion back up until it locks into place, then rotate back into the stored location. The tab on the load leg foot is pressed into a slot in the storage location on the base. And it locks into position.

2

CLICK!

To store under base, reverse steps on p. 41.

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Car seat instruction manual showing how to store the load leg

Not all vehicles allow the use of a load leg. Check the car seat instruction manual and vehicle owner's manual for use guidelines.

European Belt Routing

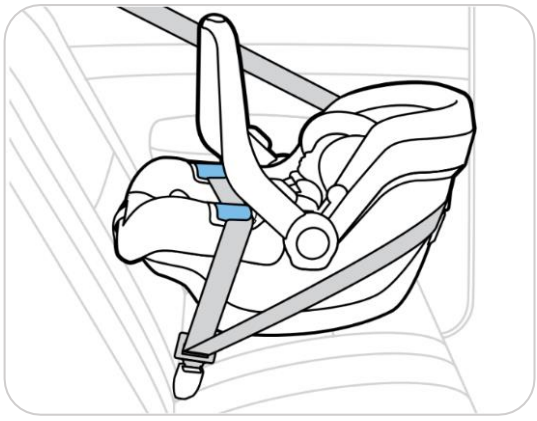
European belt routing limits forward motion in a frontal crash by limiting rotation and distributing the crash energy along the back side of the car seat.

- European belt routing may be an option when installing an infant car seat without the detachable base.
  - European belt routing may not be possible in some vehicles due to the length of the seat belt.



Infant car seat carrier installed without the detachable base using European belt routing

- A lap-and-shoulder belt must be used for European belt routing.
  - The lap belt is routed through the belt path on the carrier.
  - The shoulder belt is routed around the back of the carrier.



European belt routing



Routing the shoulder belt around the back of carrier

Rear-Facing Tethering

Like European belt routing, rear-facing tethering limits forward rotation in a frontal crash and distributes the crash forces along the back side of the car seat.

- The tether may be attached to the car seat or may be a separate part.
- The adjustable tether routes to the rear of the vehicle and attaches to the appropriate tether anchor for the seating position.
- Use of a rear-facing tether may not be possible in some vehicles due to the tether webbing length.

Check the car seat instruction manual and vehicle owner's manual for use guidelines including routing of the tether.

Examples of Rear-Facing Tethering on Convertible Car Seats





LOCK-OFFS

Lock-offs are found on some car seat models to lock the lap belt of a lap-and-shoulder belt at a fixed length. Lock-offs may replace the locking feature of lap-and-shoulder belts.

Check the vehicle owner's manual to see if the locking feature on the seat belt is allowed to be replaced by the lock-off on the car seat.

- There are many lock-off designs, including slots, clamps and doors.



Lock-off slot


Lock-off clamp


Lock-off door

- A lock-off can be on either side of a car seat or in the center of the belt path.

When multiple lock-offs are present, check the car seat instruction manual to learn which one(s) to use.

- Some vehicle seat belts have folds or buttons that can interfere with the lock-offs on some car seats, making this feature incompatible.



Seat belt with button



Seat belt with large fold

In addition to using the lock-off, some car seat manufacturers allow the retractor on the lap-and-shoulder belt to be locked.

Lock-off: The First Step

You have learned how to follow the six steps in the **What Locks a Seat Belt** flowchart.

- If a car seat has a lock-off and the seating position has a lap-and-shoulder belt, you will start by checking to see if the vehicle manufacturer allows the locking feature of a seat belt to be replaced by a lock-off.
- If use of a lock-off is allowed by both the car seat and vehicle manufacturer, you do not have to go through the other steps to test for lockability.



What Locks a Seat Belt

NEW STEP 1 Does the car seat have a lock-off feature?

NO LOCK-OFF	LOCK-OFF	LOCK-OFF
The car seat does not have a lock-off to replace the locking feature of the seat belt.	The car seat has a lock-off but the vehicle manufacturer does not allow the locking feature of the seat belt to be replaced by a lock-off.	The car seat has a lock-off and the vehicle manufacturer allows the locking feature of the seat belt to be replaced by a lock-off. The lock-off may be used to install a car seat.
NOW TEST THE SEAT BELT FOR LOCKABILITY.		**NO FURTHER LOCKABILITY CHECKS ARE NEEDED.**

RETRACTOR

STEP 2	Slowly and gently pull all the webbing out of the retractor. Do not pull the webbing out quickly as this could engage the emergency locking feature and prevent you from pulling the webbing out fully.
STEP 3	Slowly release a few inches of webbing into the retractor. Listen for a clicking sound.
STEP 4	While still holding the webbing, gently try to pull the webbing back out again.

NON-LOCKING RETRACTOR	LOCKING RETRACTOR
The retractor allows you to pull webbing back out. You do not hear a clicking sound when releasing the webbing back into the retractor. You have a non-locking retractor.	The retractor does not allow you to pull webbing back out. You may hear a clicking sound when releasing the webbing back into the retractor. You have a locking retractor you may use to install a car seat.
NOW TEST THE LATCH PLATE FOR LOCKABILITY.	**NO FURTHER LOCKABILITY CHECKS ARE NEEDED.**

TO NEXT PAGE

FROM PREVIOUS PAGE

LATCH PLATE

STEP 5 Buckle the seat belt.

STEP 6 Grasp the center of the lap belt. Pull firmly upward.

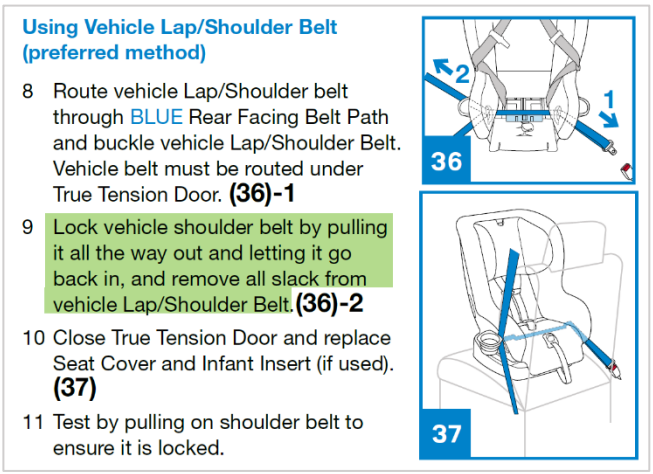
NON-LOCKING LATCH PLATE	LOCKING LATCH PLATE
The lap belt lengthens or slides through the latch plate. You have a non-locking latch plate.	The lap belt does not lengthen or slide through the latch plate. You have a locking latch plate you may use to install a car seat.
YOU MUST PROCEED WITH ADDITIONAL APPROVED BELT-LOCKING STEPS.	**NO FURTHER LOCKABILITY CHECKS ARE NEEDED.**

STEP 7 If the seat belt is a lap-and-shoulder belt and the latch plate is not sewn-on, you may use a locking clip to install the car seat.

NO FURTHER LOCKABILITY CHECKS ARE NEEDED.

TENSION DEVICES

- Some car seats have a tension device that may look like a lock-off.
  - Car seat manufacturers sometimes refer to tension devices by other terms including belt tensioning device and belt tensioning plate.
- Tension devices help to achieve a tight installation but require locking the seat belt.



Using Vehicle Lap/Shoulder Belt (preferred method)

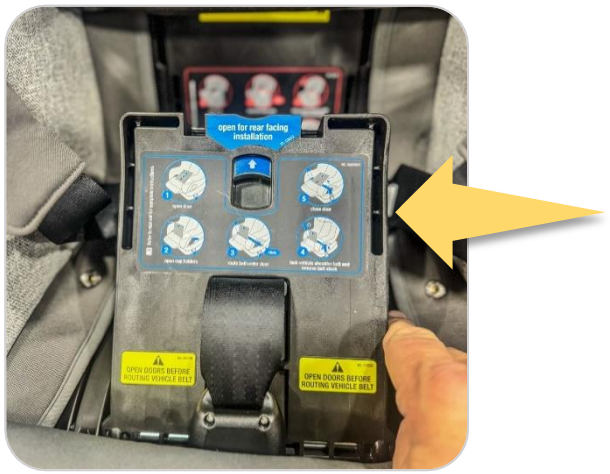
8 Route vehicle Lap/Shoulder belt through BLUE Rear Facing Belt Path and buckle vehicle Lap/Shoulder Belt. Vehicle belt must be routed under True Tension Door. **(36)-1**

9 Lock vehicle shoulder belt by pulling it all the way out and letting it go back in, and remove all slack from vehicle Lap/Shoulder Belt. **(36)-2**

10 Close True Tension Door and replace Seat Cover and Infant Insert (if used). **(37)**

11 Test by pulling on shoulder belt to ensure it is locked.

With a tension device, the car seat instruction manual will state that the seat belt requires locking.

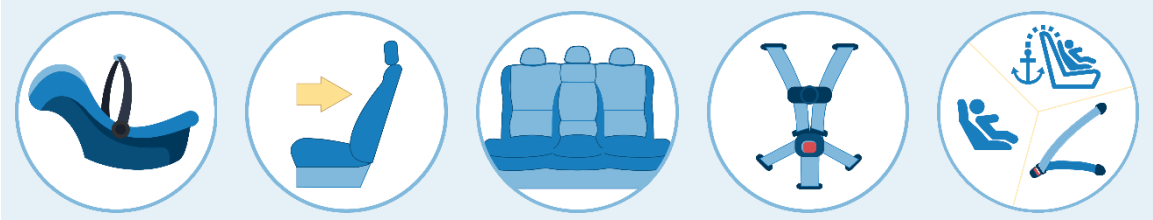


Convertible car seat with a tension device

Always check the car seat instruction manual thoroughly as some tension devices are referred to as lock-offs.

Steps for Rear-Facing Car Seat Use

The following steps can be applied to all types of rear-facing car seats.



STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Selection	**Direction**	**Location**	**Adjustment**	**Installation**



STEP 1: SELECTION

Choose the right car seat.

For the Child

- The car seat is appropriate for the child's age, weight, height and developmental level.
- In general, the top of the child's head should be at least 1 inch (2.5 cm) below the top of the car seat shell or the top of the car seat head restraint, depending on the model of the car seat.



For the Vehicle

- The car seat fits in the caregiver's vehicle.



For the Caregiver

- The caregiver can use the car seat correctly every time.



Some states, provinces and territories have laws stating how long a child must use a rear-facing car seat.

Head and Body Control

- Children with decreased head and/or body control may benefit from staying rear-facing as long as possible.
  - The greater recline in some rear-facing car seats can be very helpful for children with positioning needs.
  - Selecting a convertible or all-in-one car seat that allows recline forward-facing may also help these children as they grow and transition from rear-facing to forward-facing.





STEP 2: DIRECTION

Face the car seat the right way.

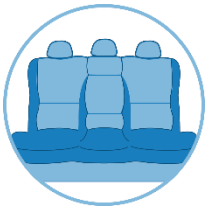
- A rear-facing car seat faces the rear of the vehicle.
- An infant or young child under the age of one and less than 26.5 lbs. (12 kg) must always ride in a rear-facing car seat.



Canada's RSSR states that a restraint designed for children weighing less than (22 lbs.) 10 kg must be rear-facing. Specific regulations may vary slightly by province or territory. Car seat manufacturers' guidelines should also be followed.

All infants and toddlers should ride in a rear-facing car seat as long as possible, until they reach the highest weight or height allowed by their car seat's manufacturer.

—American Academy of Pediatrics



STEP 3: LOCATION

Choose an appropriate seating position in the vehicle.

- Some seating positions in the vehicle may not work for car seat use.
- Consider where other passengers need to sit in the vehicle.
  - Some car seats may not fit in seating positions next to each other.



Educate caregivers that not every car seat will fit into every vehicle or in every seating position in the vehicle.

Vehicle Seating Positions Dos and Don'ts



Never use car seats on side-facing jump seats or vehicle seats that face the rear of the vehicle.

Car seats must be used on forward-facing vehicle seats.



Cargo areas should not be used for passengers.

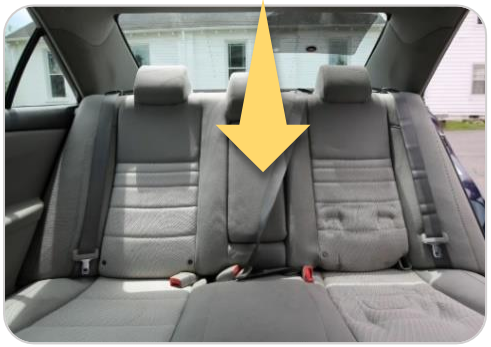


If applicable, determine if the car seat can be used with an inflatable seat belt.

Many think the rear center seating position is safer because it is farthest from where the vehicle is hit in a crash.

Some rear center seating positions are not usable according to the car seat and/or vehicle manufacturer.

In most situations, use of the rear center seating position is allowed by both the car seat and vehicle manufacturers, but there may be features that make it incompatible with car seat installation.

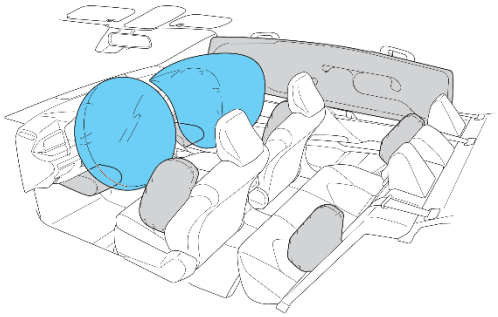


If the caregiver wants to install the car seat in the rear center seating position, check to see if the seating position has lower anchors or if borrowing of lower anchors is allowed.

If borrowing of lower anchors is not allowed, the car seat must be installed using the seat belt in that seating position.



Consideration should be given to air bag locations.



Never place a rear-facing car seat in a front vehicle seat if there is an active or advanced frontal air bag. This also applies if the 'air bag off' indicator for an advanced air bag is lit or on.

If there is a rear seat frontal air bag in the seating position, check the vehicle manufacturer's instructions to see if it must be turned off.

The car seat must fit in the selected seating position.

Check to see if the car seat fits on the vehicle seat.

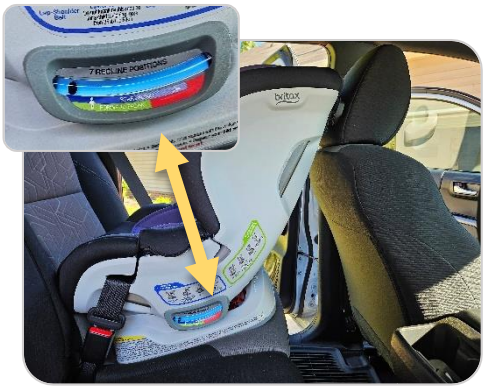


- Many car seat manufacturers require that no more than 20% of the car seat can hang over the front edge of the vehicle seat.
- Some car seat manufacturers require 100% of the car seat to fit on the vehicle seat.
- Some car seat manufacturers state how many inches or centimeters of the car seat are allowed to hang over the edge of the vehicle seat.
- Some car seats have labels or lines showing how much of the car seat is allowed to hang over the edge of the vehicle seat.

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

Smaller vehicles may not allow enough space between front and rear seating areas to achieve the correct recline angle.

Check to see if the car seat can be used at the correct recline angle in the selected seating position.



Check the car seat instruction manual and vehicle owner's manual to see if the car seat and/or carry handle can contact the vehicle seatback in front of the car seat.



STEP 4: ADJUSTMENT

Adjust the car seat harness to fit the child correctly.

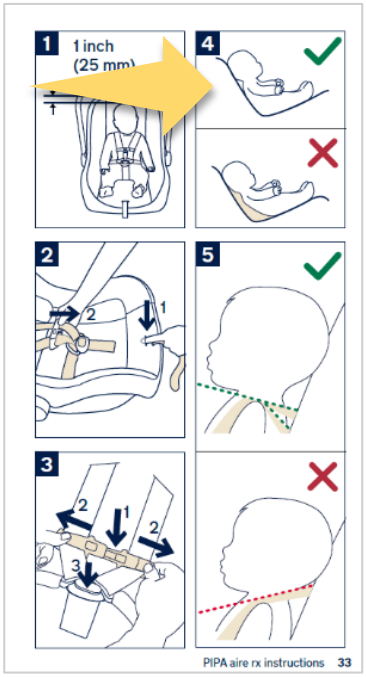
It is important to adjust the 5-point harness according to the car seat instruction manual prior to installing the car seat in the vehicle.





Substeps to Adjust the Harness to Fit the Child

1 **Place the child with their back and bottom against the back of the car seat.**



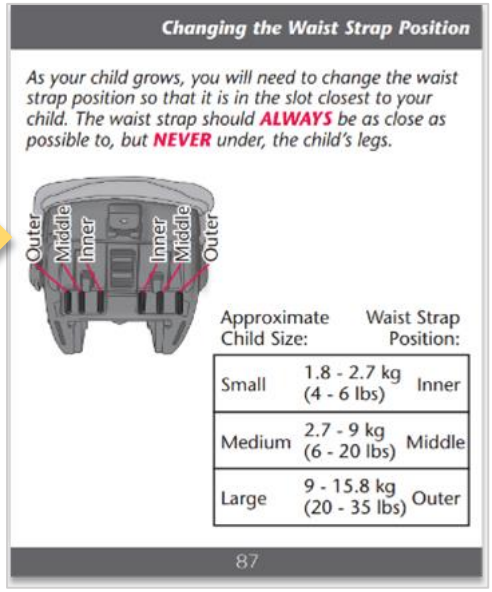
2 **Adjust the webbing at the shoulders according to the car seat manufacturer's instructions.**

- Typically, for rear-facing car seats, the shoulder harness webbing is adjusted at or below the child's shoulders.
- Some harnesses have infant loops on the webbing for a young child.



3 **If appropriate, adjust the harness at the hips.**

- On some car seats, the webbing at the hips may need to be routed differently for infants.



Changing the Waist Strap Position

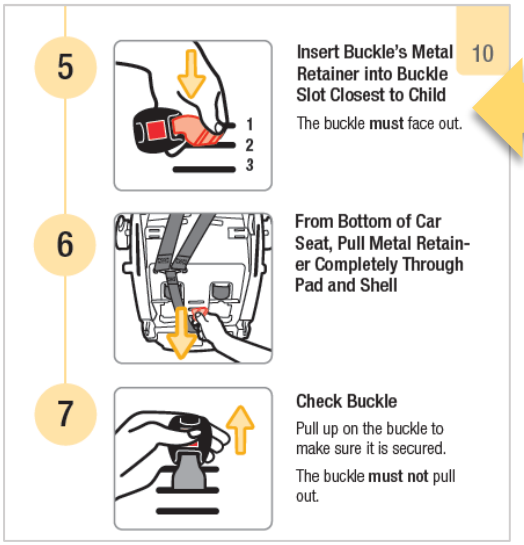
*As your child grows, you will need to change the waist strap position so that it is in the slot closest to your child. The waist strap should **ALWAYS** be as close as possible to, but **NEVER** under, the child's legs.*

Approximate Child Size:		Waist Strap Position:
Small	1.8 - 2.7 kg (4 - 6 lbs)	Inner
Medium	2.7 - 9 kg (6 - 20 lbs)	Middle
Large	9 - 15.8 kg (20 - 35 lbs)	Outer

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4 **If there are multiple buckle slots, adjust the buckle according to the car seat instruction manual.**

- Some car seat manufacturers have recommended or required buckle slot positions depending on the size of the child or mode of use for the car seat.



- Typically, the buckle should be close to the child's body but the child should not be sitting on the buckle or buckle webbing.

5 **If using allowable inserts, follow the car seat manufacturer's instructions on correct use.**

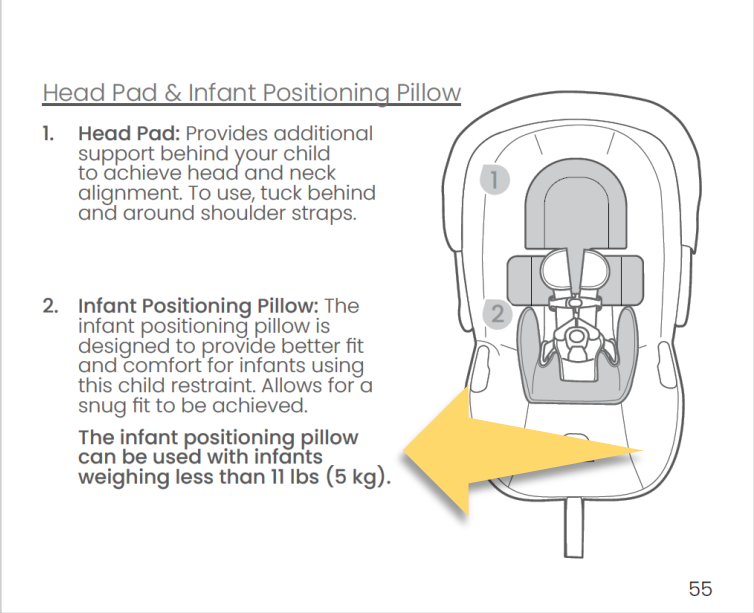
TECH TIP

Always check that the harness webbing and buckle are routed correctly through the seat padding and shell in matching slots.

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 more comfortable for their child. Only padding and inserts allowed by the car seat manufacturer for a particular car seat model are acceptable to use.

- Some car seat manufacturers may have weight limits or fit requirements for when to stop using allowable inserts.



Car seat instruction manual with weight limit for insert use

Some car seat manufacturers allow the use of rolled towels or receiving blankets along the side of an infant for support.



- Always check the car seat instruction manual to see if this is allowed.
- The rolled towel or receiving blanket must not interfere with the harness or be placed behind the infant.

Some car seat manufacturers allow the use of a rolled washcloth at the buckle for support.

- Always check the car seat instruction manual to see if this is allowed.
- The washcloth must not interfere with the harness or buckle or be placed under the infant.

STEP 5: INSTALLATION

Secure the car seat to the vehicle seat.

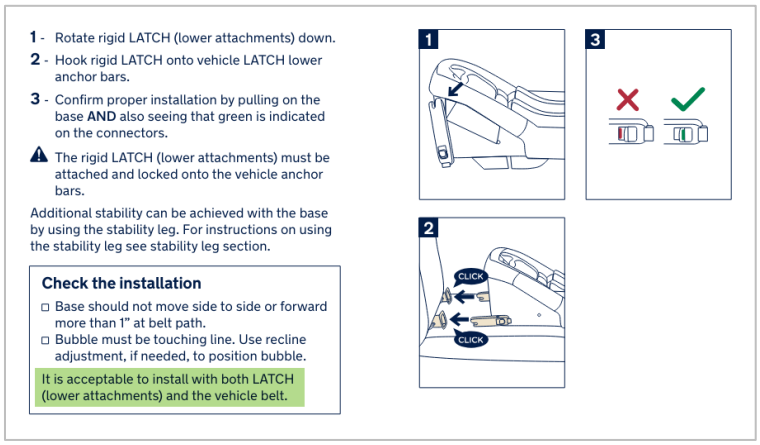
Rear-facing car seats can be installed with a seat belt or using the lower anchor attachment system as long as the child does not exceed the lower anchor use weight limit.





The installation methods are different but either method is safe when used correctly.

Some car seat and vehicle manufacturers allow the use of both the seat belt and lower anchor attachment system at the same time.



TECH TIP

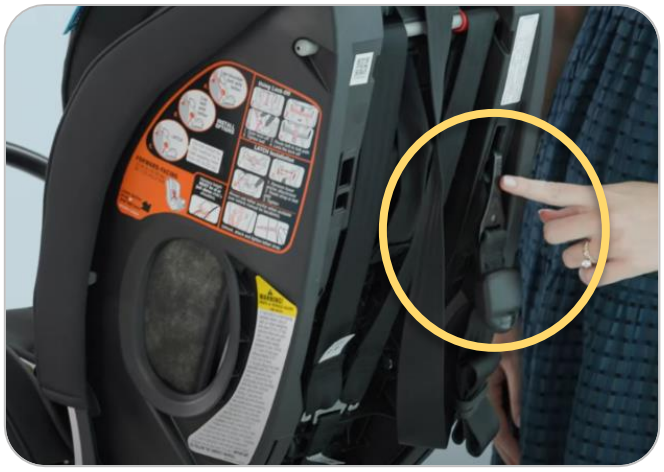
When installing the car seat in the vehicle, take care not to strain yourself. You should not climb into a car seat. You should tighten the seat belt or flexible lower anchor attachment system using leverage, not force.

Substeps to Secure the Car Seat to the Vehicle Seat

The following are general steps for car seat installation. Always follow the car seat manufacturer's instructions for the specific car seat model.

1 Prepare the car seat for installation.

- For infant car seats, remove the carrier from the detachable base using the carrier release.
- For a seat belt installation, store the unused lower anchor connectors and tether according to the car seat manufacturer's instructions.
- Determine if there is a lock-off on the car seat and, if so, how it will be used.



Store unused lower anchor connectors and tether.

2 Determine the correct belt path.

Check the car seat instruction manual and labels on the car seat to determine the correct belt path.

For infant car seats:

- When using a detachable base, use the belt path on the detachable base. Do not use the belt path on the carrier.
- When using a carrier without a detachable base, use the belt path on the carrier.

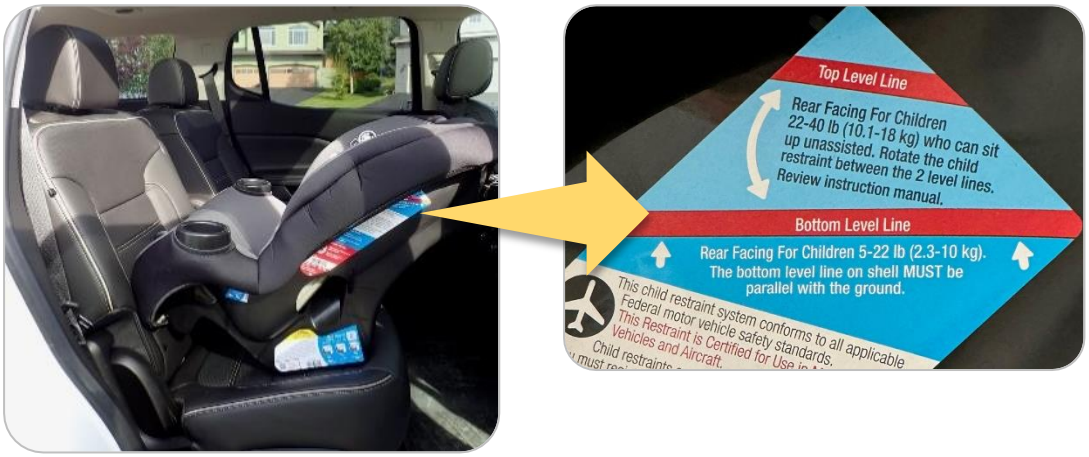
Convertible and all-in-one car seats may have more than one belt path.

- Use the belt path marked for rear-facing use.



3. **Place the car seat on the selected vehicle seating position in the rear-facing direction.**

4. **Adjust the car seat to the appropriate recline angle.**



5. **Follow the car seat manufacturer's instructions when using an anti-rebound bar/panel, load leg, rear-facing tether or other features on the car seat.**

6. **Install the car seat using the selected installation method.**

Seat Belt Installation



A. Route the seat belt through the correct belt path for rear-facing use. The webbing should be flat, not twisted.



B. Buckle the seat belt.



C. Place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the seat belt near the buckle.

When possible, lift the car seat cover to grab the shoulder belt closer to the buckle allowing you to tighten the lap belt using leverage.



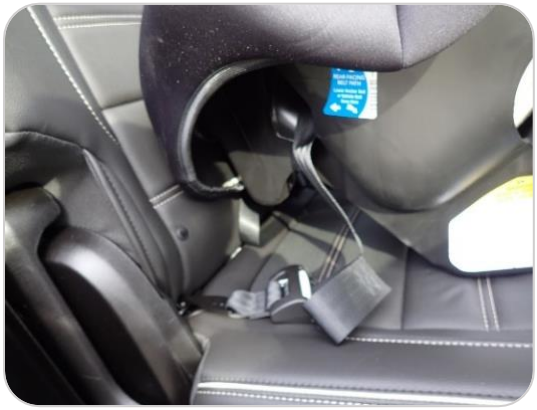
D. While holding the seat belt tight, lock the seat belt at a fixed length using the retractor, latch plate, lock-off or locking clip.

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 tilting can be reduced by pulling the seat belt on the buckle side of the car seat when tightening.

Other fixes include installing the car seat using the lower anchor attachment system or using a locking clip to lock the seat belt at a fixed length.

Lower Anchor Attachment System Installation





A. If applicable, route the lower anchor webbing through the rear-facing belt path. The webbing should be flat, not twisted.

B. Secure the lower anchor connectors to the lower anchors in the vehicle. Make certain the heavier, thicker part of the lower anchor connector goes over the lower anchor.

C. Place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the lower anchor webbing.

Pulling the loose end of the lower anchor webbing back through the belt path will allow you to tighten the webbing more easily.



TECH TIP

When approved by the car seat manufacturer, a rear-facing car seat should only be tethered to a tether anchor location allowed by the vehicle manufacturer.

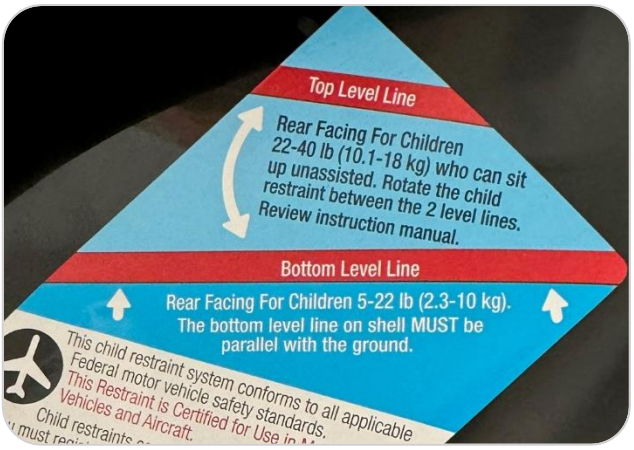
7 **Make sure the car seat moves less than 1 inch (2.5 cm) side-to-side or front-to-back when pulling or pushing at the belt path using moderate force.**

- If the car seat moves more than 1 inch (2.5 cm) in any direction, at the belt path, tighten the seat belt or lower anchor webbing.



8 **Double check the recline angle and make necessary adjustments.**

- This may require unbuckling the seat belt or loosening the lower anchor webbing and then reinstalling the car seat.



9 **Place the child in the car seat and secure the harness.**

Securing the Harness



A. Place the child in the car seat making sure the child's back and bottom are flat against the car seat back.



B. Place the harness webbing over the shoulders and around the hips.

Check that the harness is at or below the child's shoulders.

The harness should be flat, not twisted.



C. Buckle the harness and secure the chest clip.





D. Tighten the harness so it is snug against the child's body.

Be sure to pull the extra webbing from the hip areas through to the shoulders or wherever the harness tightens.

The harness needs to be snug and hold the child down in the car seat so they do not slide up in a crash or be thrown from the car seat.

A snug harness 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.



E. Check the harness. You should not be able to pinch excess webbing at the shoulder once the harness is tightened. This is called the pinch test.



F. Position the chest clip at armpit level.



ACTIVITY—HARNESSING IN REAR-FACING CAR SEATS

1. Using car seats and a doll, practice adjusting the harness height and buckle for rear-facing use. Harness the doll according to the car seat instruction manual.
2. Have an Instructor check and approve each harnessing adjustment as indicated on the following chart.
   - Be prepared to explain how the harness height and buckle are adjusted on each car seat.
   - Be ready to show the Instructor how to tighten and loosen the harness on each car seat.

Car Seat	Harness Type	Number of Buckle Slots
Infant Car Seat	☐ Rethread (with splitter plate) ☐ No-Rethread (with height adjuster)	
Convertible or All-in-One Car Seat	☐ Rethread (with splitter plate) ☐ No-Rethread (with height adjuster)	

Other Reminders

BLANKETS/BULKY CLOTHING

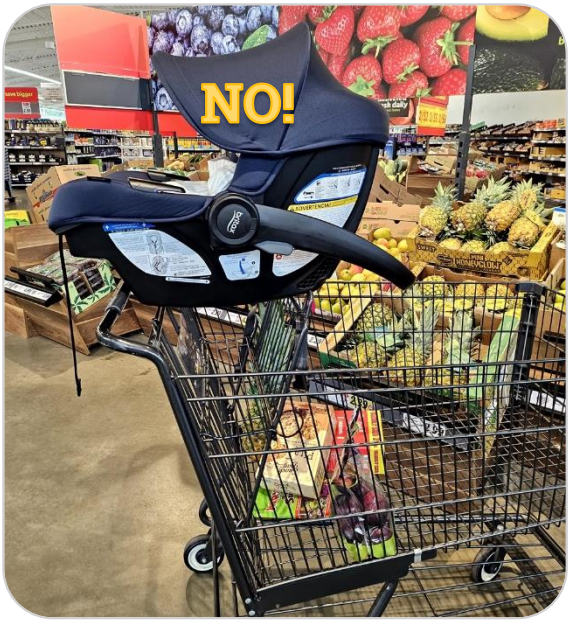
Any products sold for warmth for use in car seats should fit over the shell of the car seat, never between the child and harness.

- Bulky clothing like winter coats should be removed before putting a child in the car seats.
- Blankets can be placed over the child after the harness is secured.



GENERAL USE GUIDELINES

- Car seats are for use in vehicles and some strollers.
- Best practice is to never place car seats on an elevated or unstable surface such as the top of a shopping cart, highchair or counter.



Never place a car seat on top of a shopping cart.

SAFE SLEEP

Some caregivers may think it is safe to leave a sleeping child in the car seat when they reach their destination. Best practice is to transfer a sleeping child from their car seat to a firm, flat safe sleep surface free from items like pillows, blankets and stuffed animals.

- Leaving a sleeping child in the car seat and unbuckling or loosening the harness will put them at an increased risk of injury including breathing difficulties, strangling on the harness and falling out of the car seat.



Remove a sleeping child from the car seat when in the home.

PEDIATRIC VEHICULAR HEATSTROKE PREVENTION

Children can die of heatstroke in hot cars when their body temperature reaches about 107° F (41.7° C). This occurs when children are forgotten, gain access or are knowingly left in a hot car.

Share prevention tips with caregivers:

- Never leave a child in a vehicle unattended for any amount of time.
- Make it a habit to check in and all around in the vehicle before walking away.
- Always lock the vehicle so children cannot get into the vehicle.
  - Store keys and key fobs out of reach.
  - Teach children that cars are never a place to play.
- Ask childcare providers to call if the child does not arrive when expected.
- Create reminders.
  - Keep a stuffed animal or another item in the child's car seat when it is empty.
  - Move the item to the front seat as a visual reminder when the child is in their car seat.
- Place and secure phones, bags or purses in the back seat when traveling with a child.



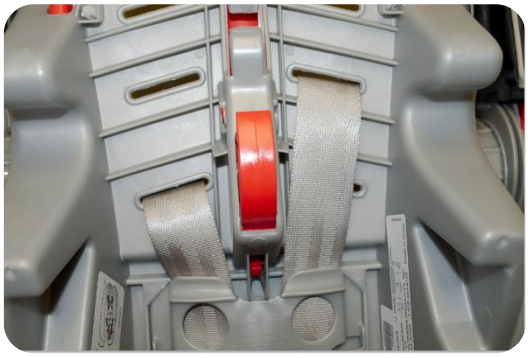
For more information from NHTSA, visit: nhtsa.gov/heatstroke. For more information from Transport Canada, visit: tc.canada.ca/en/road-transportation/dangers-hot-vehicles-children.

Practice • Spot Misuse

Can you spot misuse in these photos? The images may reveal selection, harnessing or installation errors. Write your observation beneath the image. You will find an answer key in the Appendix.
















MODEL NAME: KEYFIT 30 MCODE: 10840 T-03
MODEL NO.08 079015 020 070
SERIAL NO.18 04 03 0897
MANUFACTURED IN: APR2018
DO NOT USE AFTER: APR2024
Made in China
Artsana USA, INC.
Lancaster, PA 17601
chiccousa.com
1-877-424-4226
Patent info: chiccoshop.com/patents/patents.html
LA0139.1-002

Progress Check

1 How should the harness be positioned at the shoulders for a rear-facing child?

TG PAGE(S) ↓

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

TG PAGE(S) ↓

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

TG PAGE(S) ↓

4 How do you test for correct harness tightness?

TG PAGE(S) ↓

ACTIVITY—INSTALL REAR-FACING CAR SEATS

1. Complete the installations as indicated on the following chart.
2. Have an Instructor check and approve each installation.
   - Be prepared to explain how the car seat is secured in the vehicle.

Installation	Lap-and-Shoulder Belt*	Lap-and-Shoulder Belt with Locking Clip	Lower Anchors
Infant Car Seat, Carrier with Detachable Base			
Infant Car Seat, Carrier without Detachable Base			(if available)
Convertible/All-in-One in the Rear-Facing Mode			

***Use a lock-off for at least one installation.**

MODULE VIDEOS

- Why Children Should Travel Rear-Facing
- Why So Many Car Seat Types?
- Rear-Facing Harness Adjustment and Fit
- Using a Lock-off
- What Locks a Seat Belt? Putting it All Together—Steps 1–7
- How to Install a Car Seat—Overview with Different Seat Belt Systems
- How to Install a Rear-Facing Car Seat

9

Forward-Facing Car Seats

In this module, we will answer:

- What types of car seats have a forward-facing mode of use?
- What are the best practices for forward-facing car seat use?
- What are the steps for correct use of forward-facing car seats?
- How do you identify possible forward-facing car seat misuse?

WORD WATCH

The following terms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

built-in car seat

harness/vest

seat belt positioner

ABOUT THIS MODULE

Forward-facing car seats should be used for children once they outgrow their rear-facing car seat's weight or height limit.





Types of Car Seats with a Forward-Facing Mode

There are five types of car seats with a 5-point harness that can be used forward-facing.



Convertible car seat



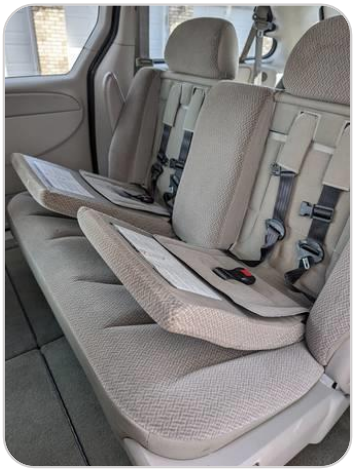
All-in-one car seat



Combination car seat



Forward-facing only car seat



Built-in car seat

Always check the labels on the car seat and/or car seat instruction manual for the age, weight and height ranges for forward-facing use.

Caregivers should never use a car seat outside the age, weight or height limit for that car seat.

CONVERTIBLE AND ALL-IN-ONE CAR SEATS

A convertible car seat or all-in-one car seat should be used in the forward-facing mode once a child reaches the highest weight or height limit for rear-facing use.



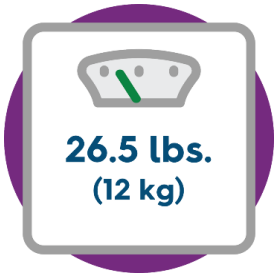
Convertible car seat

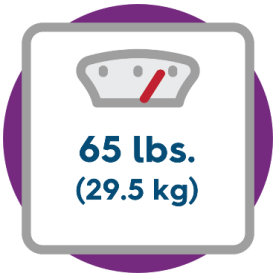


All-in-one car seat

Weight Range

- Most convertible and all-in-one car seats have a starting weight for forward-facing use of at least 26.5 lbs. (12 kg).





- Many convertible and all-in-one car seats can accommodate children up to 65 lbs. (29.5 kg) in the forward-facing mode.

In Canada, most convertible and all-in-one car seats have a minimum weight limit for forward-facing use of 22 lbs. (10 kg).

Convertible and all-in-one car seats have different modes of use. Check the car seat instruction manual for detailed information on using the car seat in the forward-facing mode.

COMBINATION CAR SEATS

A combination car seat can be used forward-facing with the 5-point harness until the child reaches the highest weight or height limit for harness use and then as a booster seat.



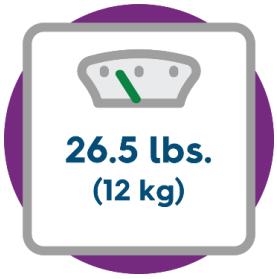
Combination car seat

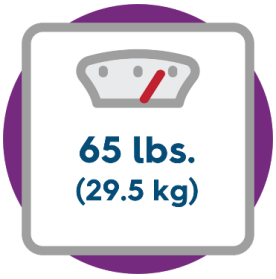


Combination car seat

Weight Range

- Most combination car seats have a starting weight for forward-facing use of at least 26.5 lbs. (12 kg).





- Many combination car seats can accommodate children up to 65 lbs. (29.5 kg) when using the harness.

Combination car seats have different modes of use. Check the car seat instruction manual for information specific to using the car seat with the harness.

FORWARD-FACING ONLY CAR SEATS

A forward-facing only car seat must only be used forward-facing.

Forward-facing only car seats do not have a rear-facing or booster seat mode.



Forward-facing only car seat

BUILT-IN CAR SEATS

Some vehicles have a car seat built into the vehicle seat.

- Some vehicle manufacturers may refer to built-in car seats as integrated car seats.
- Built-in car seats do not have an expiration date.



Built-in car seats

Check the vehicle owner's manual for detailed use instructions including weight and height limits.

Best Practice Recommendations

Best practice is for a child to ride rear-facing for as long as possible until reaching the highest weight or height limit for the rear-facing mode of the car seat.

Once a child outgrows a rear-facing car seat's weight or height limit, best practice is for the child to move to a forward-facing car seat with a 5-point harness until the child reaches the highest weight or height limit for the forward-facing mode of the car seat as allowed by the car seat manufacturer.



Caregivers may have difficulty determining when it is time to move their child from a rear-facing to a forward-facing car seat.

- The following guidelines may help caregivers in making this decision.

GOOD	BETTER	BEST
The child is moved to a forward-facing car seat as soon as the lowest age, weight and height requirements for that car seat are met, even though the child is within the weight and height limits for their rear-facing car seat. State/provincial/territorial law is being met.	The child is moved to a forward-facing car seat when above the lowest age, weight and height requirements for that car seat, even though the child is within the weight and height limits for their rear-facing car seat. State/provincial/territorial law is being met.	The child uses a rear-facing car seat until reaching the highest weight or height limit for the rear-facing mode of that car seat before moving to a forward-facing car seat. State/provincial/territorial law is being met.

Using Good, Better, Best Guidelines

Using this convertible car seat instruction manual, compare how each child fits Good, Better, Best guidelines to ride forward-facing.

HEIGHT	WEIGHT	AGE
25 – 43 in. 64 – 110 cm	14 – 50 lb 6.4 – 22.7 kg	Able to sit upright alone

HEIGHT	WEIGHT	AGE
30 – 49 in. 76 – 124 cm	22 – 65 lb 10 – 29.5 kg	2+ years recommended (1 year min.)



Convertible car seat in rear-facing mode

OR



Convertible car seat in forward-facing mode



AGE: 12.5 mos.
WEIGHT: 22 lbs. (10 kg)
HEIGHT: 30 in. (76 cm)

This child is within the weight and height limits for the rear-facing mode of the car seat.

For forward-facing use:

They meet the required minimum age of 1 year.

They meet the lowest weight and height limits.

GOOD



AGE: 2.5 years
WEIGHT: 35 lbs. (15.9 kg)
HEIGHT: 36 in. (91.4 cm)

This child is within the weight and height limits for the rear-facing mode of the car seat.

For forward-facing use:

They meet the recommended minimum age of 2 years.

They are above the lowest weight and height limits.

BETTER



AGE: 5.5 years
WEIGHT: 56 lbs. (25 kg)
HEIGHT: 42.5 in. (108 cm)

This child has outgrown the weight and height limits for the rear-facing mode of the car seat.

For forward-facing use:

They meet the recommended minimum age of 2 years.

They are above the lowest weight and height limits.

BEST

Parts of Forward-Facing Car Seats

It is important to be familiar with the parts of car seats and their functions.



Keep in mind that parts on car seats may look different but serve the same function. Their design may vary by manufacturer and by model. Always check the car seat instruction manual for additional information.

The following diagrams show many of the common parts found on forward-facing car seats. Be sure to look up any of the parts referenced in your **Glossary of Terms** in the Appendix if needed.

CONVERTIBLE CAR SEAT

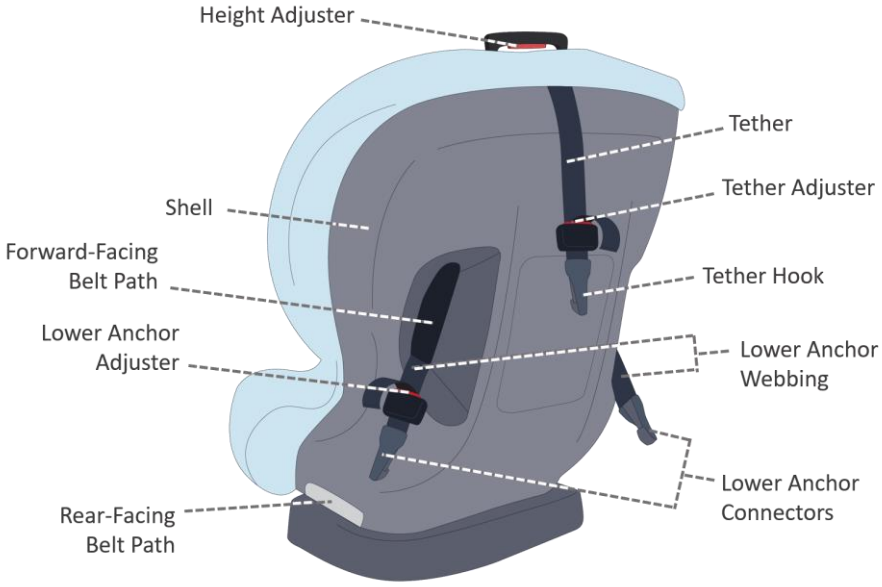
Convertible Car Seat

Front View



Convertible Car Seat

Back View



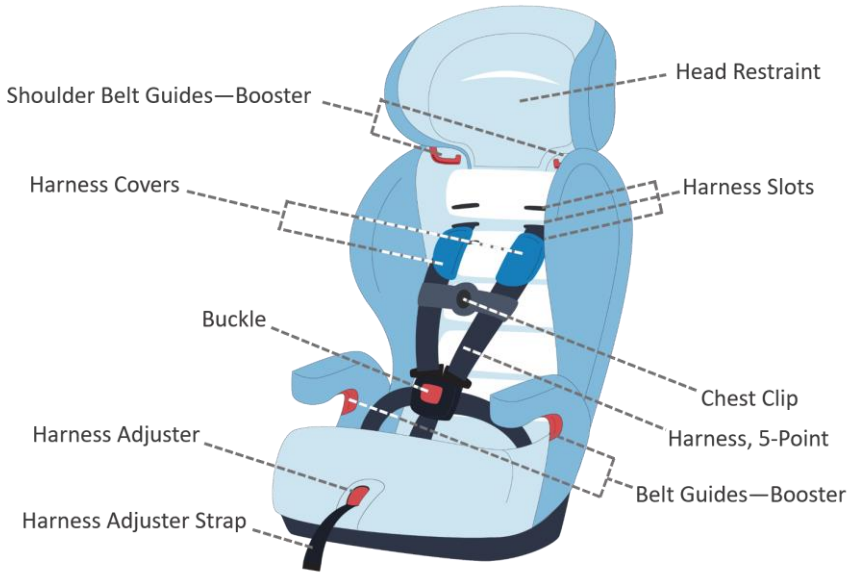
Parts on an all-in-one car seat are similar to those on a convertible car seat.

COMBINATION CAR SEAT

A combination car seat can be used forward-facing with the 5-point harness or as a booster seat.

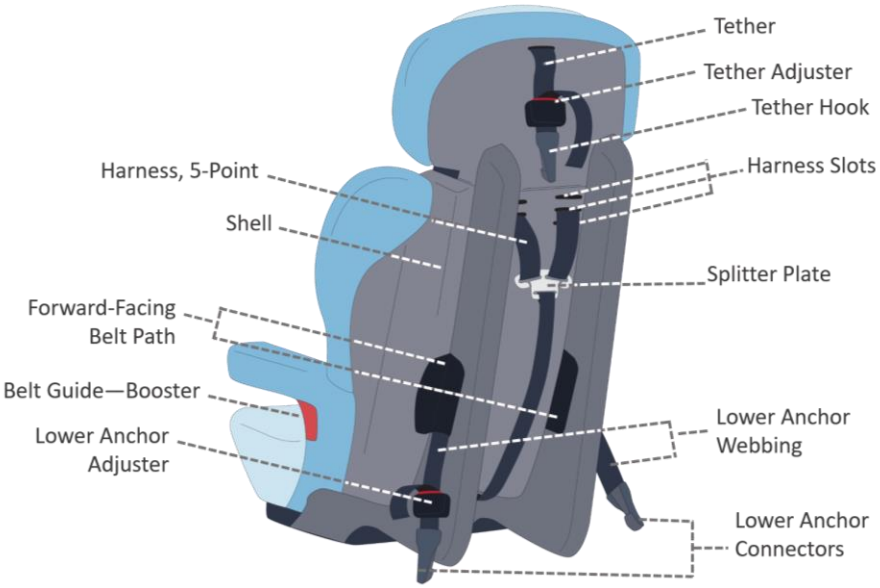
Combination Car Seat

Front View



Combination Car Seat

Back View



Steps for Forward-Facing Car Seat Use

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



STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Selection	**Direction**	**Location**	**Adjustment**	**Installation**

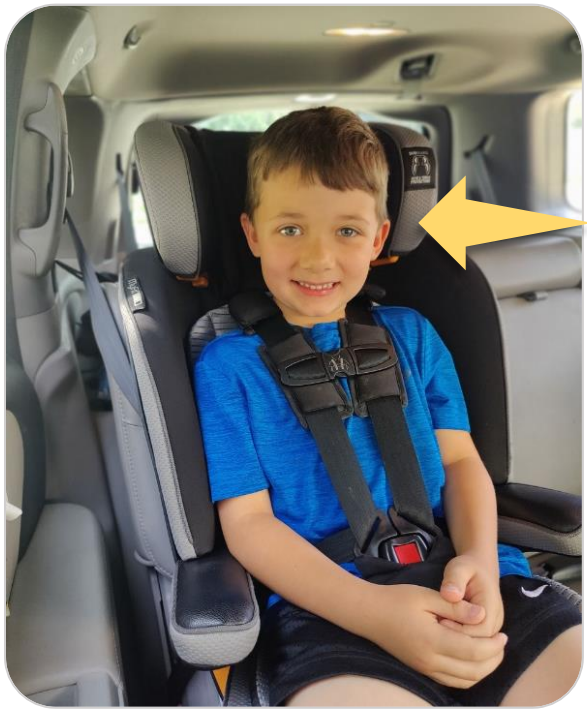


STEP 1: SELECTION

Choose the right car seat.

For the Child

- The car seat is appropriate for the child's age, weight, height and developmental level.
  - Some car seat manufacturers require a child to be at least 2 years old to use a forward-facing seat.
- Typically, the top of the child's ears should be at or below the top of the car seat shell or the top of the car seat head restraint, depending on the model of car seat.



For the Vehicle

- The car seat fits in the caregiver's vehicle.



For the Caregiver

- The caregiver can use the car seat correctly every time.



Some states, provinces and territories have laws stating how long a child must use a rear-facing car seat.

Some states, provinces and territories have laws stating how long a child must use a forward-facing car seat with a 5-point harness.



STEP 2: DIRECTION

Face the car seat the right way.

- A forward-facing car seat faces the front of the vehicle.





STEP 3: LOCATION

Choose an appropriate seating position in the vehicle.

- Some seating positions in the vehicle may not work for car seat use.
- Consider where other passengers need to sit in the vehicle.
  - Some car seats may not fit in seating positions next to each other.





Educate caregivers that not every car seat will fit into every vehicle or in every seating position in the vehicle.

Vehicle Seating Positions Dos and Don'ts



Never use car seats on side-facing jump seats or vehicle seats that face the rear of the vehicle.

Car seats must be used on forward-facing vehicle seats.



Cargo areas should not be used for passengers.

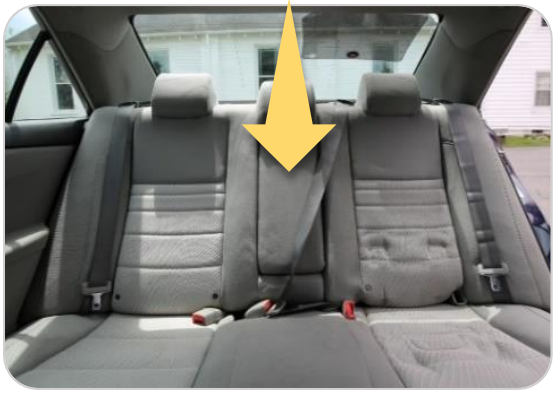


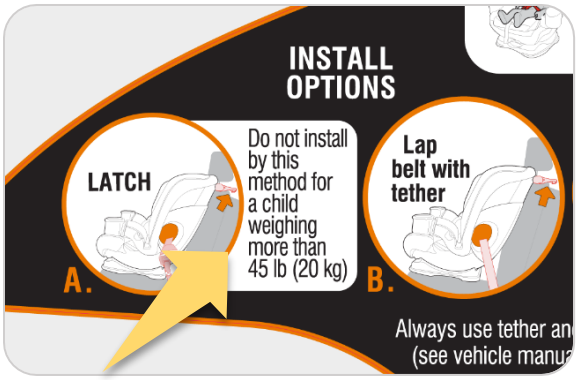
If applicable, determine if the car seat can be used with an inflatable seat belt.

Many think the rear center seating position is safer because it is farthest from where the vehicle is hit in a crash.

Some rear center seating positions are not usable according to the car seat and/or vehicle manufacturer.

In most situations, use of the rear center seating position is allowed by both the car seat and vehicle manufacturers, but there may be features that make it incompatible with car seat installation.



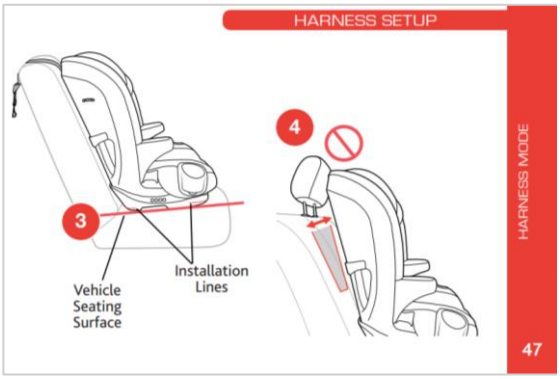


Weight limits on lower anchors and tether anchors can affect the installation method and seating position used.

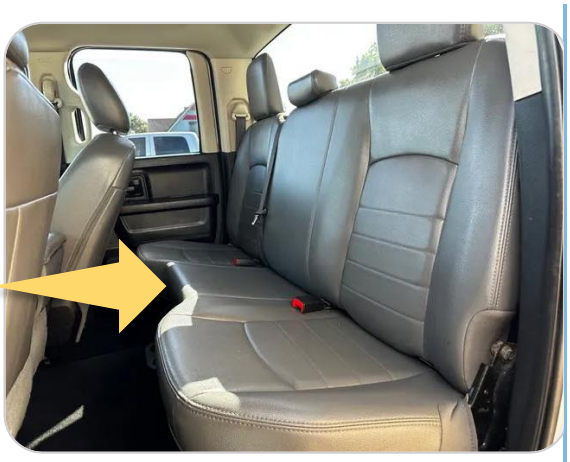


Choose a seating position with an available tether anchor whenever possible.

In Canada, by Federal requirements, a tether is always required for installation of forward-facing car seats.



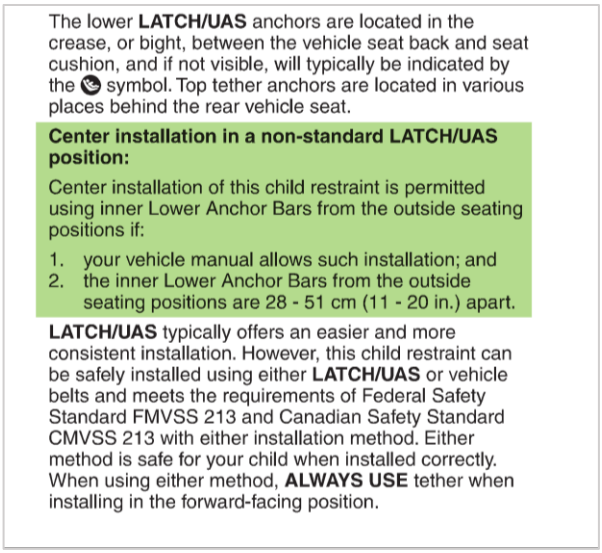
Check if vehicle head restraint pushes the top of the car seat forward. If it does, check both the car seat and vehicle manufacturers instructions for guidance.



Small rear bench seats, like those found in some pickup trucks and sport utility vehicles, may not be deep enough to allow correct use of a car seat.

If the caregiver wants to install the car seat in the rear center seating position, check to see if the seating position has lower anchors or if borrowing of lower anchors is allowed.

- If borrowing of lower anchors is not allowed, the car seat must be installed using the vehicle seat belt in that seating position.



The lower **LATCH/UAS** anchors are located in the crease, or bight, between the vehicle seat back and seat cushion, and if not visible, will typically be indicated by the symbol. Top tether anchors are located in various places behind the rear vehicle seat.

Center installation in a non-standard LATCH/UAS position:

Center installation of this child restraint is permitted using inner Lower Anchor Bars from the outside seating positions if:

1. your vehicle manual allows such installation; and
2. the inner Lower Anchor Bars from the outside seating positions are 28 - 51 cm (11 - 20 in.) apart.

LATCH/UAS typically offers an easier and more consistent installation. However, this child restraint can be safely installed using either **LATCH/UAS** or vehicle belts and meets the requirements of Federal Safety Standard FMVSS 213 and Canadian Safety Standard CMVSS 213 with either installation method. Either method is safe for your child when installed correctly. When using either method, **ALWAYS USE** tether when installing in the forward-facing position.

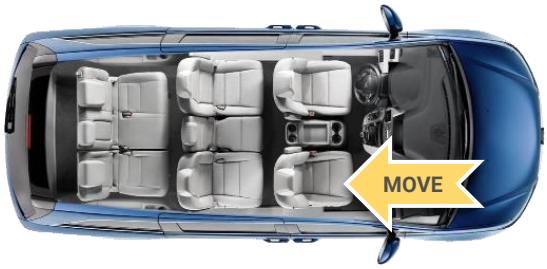
Car seat installation directions allowing borrowing of lower anchors

Consideration should be given to air bag locations.

- If there is a rear seat frontal air bag in the seating position, check the vehicle manufacturer's instructions to see if it must be turned off.
- If a child who rides in a forward-facing car seat must sit in the front seat, the vehicle seat should be moved as far back as possible from the dashboard and air bags.



Check vehicle manufacturer's instructions for use of forward-facing car seat in a seating position with a rear seat frontal air bag.



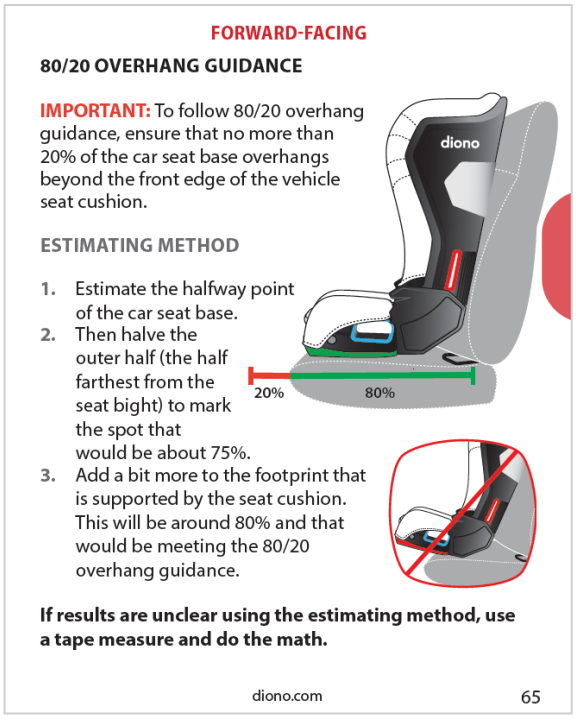
Move the vehicle seat as far back from the dashboard and air bags as possible with a forward-facing car seat in the front seat.

Always follow back seat law, if applicable.

The car seat must fit in the selected seating position.

Check to see if the car seat fits on the vehicle seat.

- Many car seat manufacturers require that no more than 20% of the car seat can hang over the front edge of the vehicle seat.
- Some car seat manufacturers require 100% of the car seat to fit on the vehicle seat.
- Some car seat manufacturers state how many inches or centimeters of the car seat are allowed to hang over the edge of the vehicle seat.



Car seat installation instructions regarding overhang

- Some car seats have labels or lines showing how much of the car seat is allowed to hang over the edge of the vehicle seat.



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



STEP 4: ADJUSTMENT

Adjust the car seat harness to fit the child correctly.

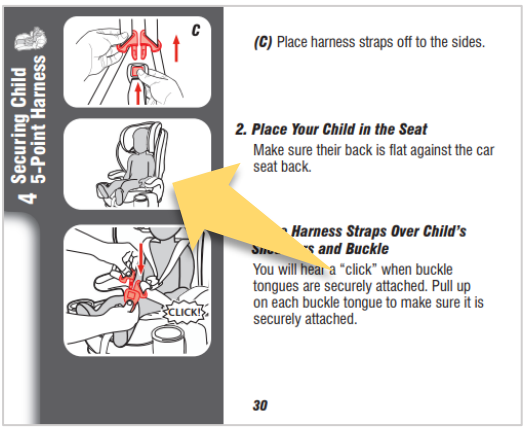
It is important to adjust the 5-point harness according to the car seat instruction manual prior to installing the car seat in the vehicle.





Substeps to Adjust the Harness to Fit the Child

1. **Place the child with their back and bottom against the back of the car seat.**

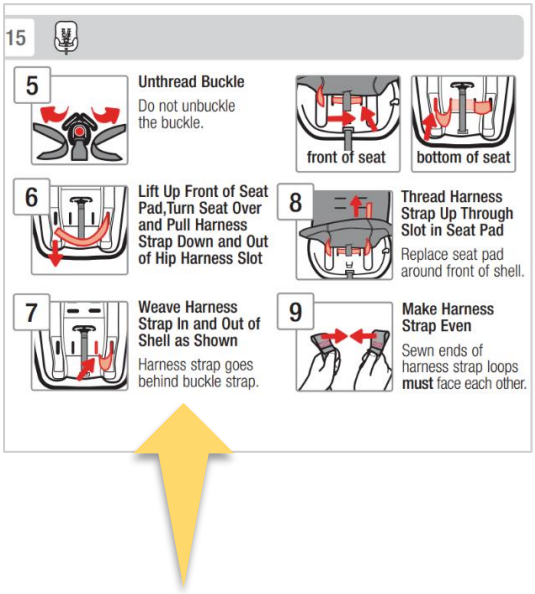


2. **Adjust the webbing at the shoulders according to the car seat manufacturer's instructions.**

- Typically, for forward-facing car seats, the shoulder harness webbing is adjusted at or above the child's shoulders.
- Make certain to use the harness slots allowed for forward-facing use.

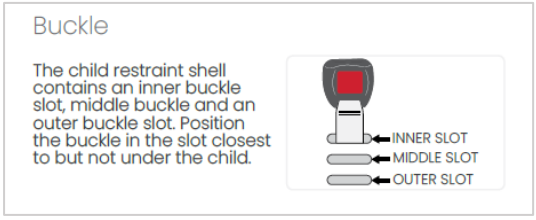


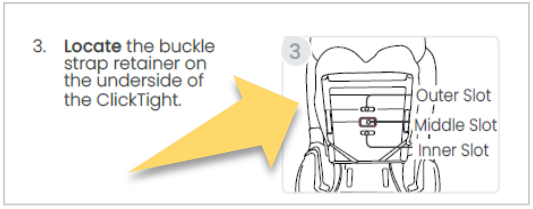
3 **If appropriate, adjust the harness at the hips.**



4 **If there are multiple buckle slots, adjust the buckle according to the car seat instruction manual.**

- Some car seat manufacturers have recommended or required buckle slot positions depending on the size of the child or the mode of use of the car seat.





- Typically, the buckle should be close to the child's body but the child should not be sitting on the buckle or buckle webbing.

5 **If using allowable inserts, make certain to follow the car seat manufacturer's guidelines on correct use.**

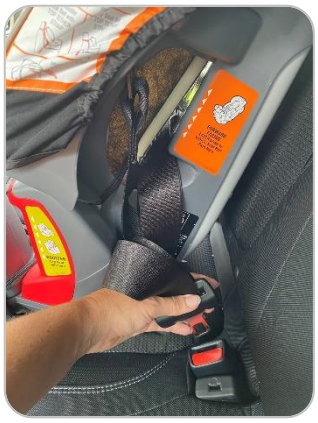


STEP 5: INSTALLATION

Secure the car seat to the vehicle seat.

Forward-facing car seats can be installed with a seat belt and tether or using LATCH/UAS with tether as long as the child does not exceed the lower anchor use weight limit.

The installation methods are different but either method is safe when used correctly.





Some car seat and vehicle manufacturers allow the use of both the seat belt and lower anchor attachment system at the same time.

In the U.S., it is best practice to tether forward-facing car seats whenever possible.

Step 7 (If installing with LATCH and vehicle belt)

This car seat may be installed forward-facing with both LATCH and the vehicle belt. This type of installation will allow the LATCH to be used until the child reaches the maximum size requirements of the seat.

IMPORTANT: NEVER install this car seat using both LATCH and vehicle belt if prohibited in the vehicle's owner's manual or if either of the conditions shown in **Figures 82** and **83** exist.



Figure 82

Vehicle belt buckle is located in between LATCH lower anchors



Figure 83

Vehicle belt is located in between LATCH lower anchors

Secure car seat with vehicle belt:

- Route vehicle belt through the Forward-Facing Belt Path, taking care not to put vehicle belt between Harness and back of seat, and buckle vehicle belt, as shown in **Figure 84**.

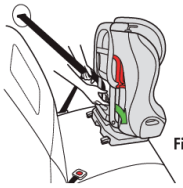


Figure 84

- Open the Forward-Facing Belt Lock-off on the same side of the seat as the vehicle shoulder belt anchor point. Place the vehicle shoulder belt through the Forward-Facing Belt Lock-off as shown in **Figure 85**.

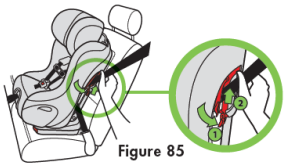


Figure 85

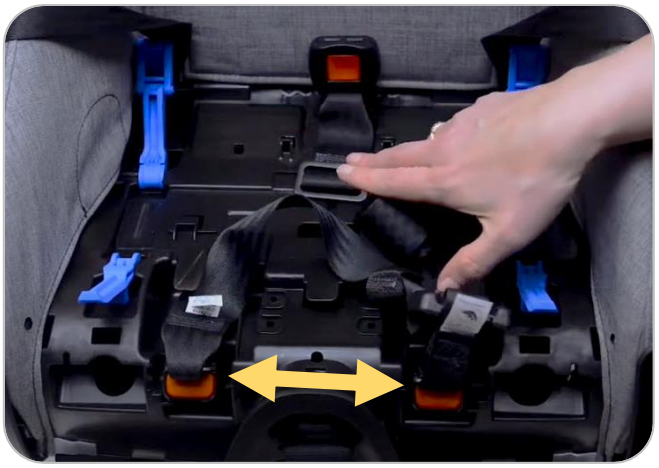
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Substeps to Secure the Car Seat to the Vehicle Seat

The following are general steps for car seat installation. Always follow the car seat manufacturer's instructions for the specific car seat model.

1 Prepare the car seat for installation.

- For a seat belt installation, store the unused lower anchor connectors according to the car seat manufacturer's instructions.
- Determine if there is a lock-off on the car seat and, if so, how it will be used.



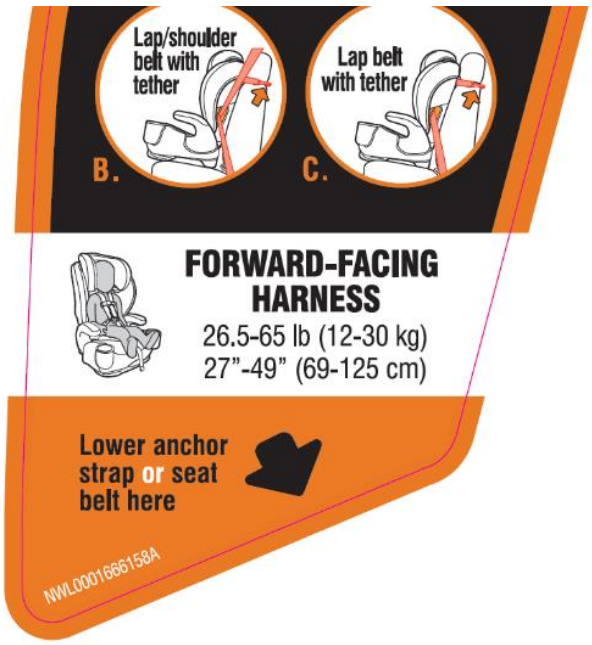
Store unused lower anchor connectors.

2 Determine the correct belt path.

Check the car seat instruction manual and labels on the car seat to determine the correct belt path.

Convertible, all-in-one and combination car seats may have more than one belt path.

- Use the belt path marked for forward-facing use.



3 **Determine how to route the tether.**

In the U.S., it is best practice to tether forward-facing car seats whenever possible.



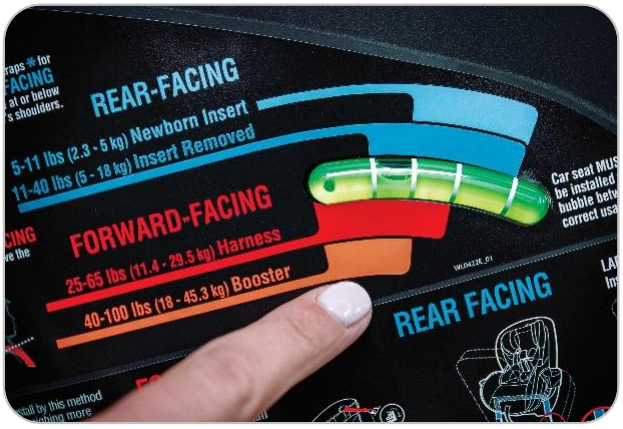
In Canada, by Federal requirements, a tether is always required for the installation of forward-facing car seats.

4 **Place the car seat on the selected seating position in the forward-facing direction.**

Make certain the tether is not tucked between the car seat and vehicle seatback.



5 **If applicable, make sure the recline adjustment is in the correct position for forward-facing use.**



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

6 **Follow the car seat manufacturer's instructions when using a load leg or other features on the car seat.**

7 **Install the car seat using the selected installation method.**

Seat Belt Installation



A. Route the seat belt through the correct belt path for forward-facing use. The webbing should be flat, not twisted.



B. Buckle the seat belt.



C. Place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the seat belt near the buckle.

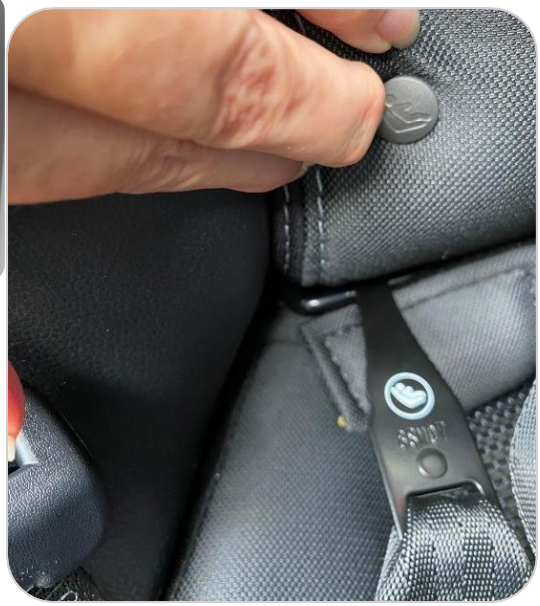
When possible, lift the car seat cover to grab the shoulder belt closer to the buckle allowing you to tighten the lap belt using leverage.



D. While holding the seat belt tight, lock the seat belt at a fixed length using the retractor, latch plate, lock-off or locking clip.

Lower Anchor Attachment System Installation





A. If applicable, route the lower anchor webbing through the forward-facing belt path. The webbing should be flat, not twisted.

B. Secure the lower anchor connectors to the lower anchors in the vehicle.

Make certain the heavier, thicker part of the lower anchor connector goes over the lower anchor.

C. Place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the lower anchor webbing.

Pulling the loose end of the lower anchor webbing back through the belt path will allow you to tighten the webbing more easily.



8 **Route, secure and tighten the tether.**

- The tether should be flat, not twisted.
- The tether should be pulled tightly with no slack.
  - Overtightening the tether may lift the car seat off of the vehicle seat.





9 **Make sure the car seat moves less than 1 inch (2.5 cm) side-to-side or front-to-back when pulling or pushing at the belt path using moderate force.**

- If the car seat moves more than 1 inch (2.5 cm) in any direction, at the belt path, tighten the seat belt or lower anchor webbing.



10 **If applicable, double check the recline angle and make necessary adjustments.**

- This may require unbuckling the seat belt or loosening the lower anchor webbing and then reinstalling the car seat.



11 **Place the child in the car seat and secure the harness.**

Securing the Harness



A. Make sure the child's back and bottom are flat against the car seat back.



B. Place the harness webbing over the shoulders and around the hips.

Check that the harness is at or above the child's shoulders.

The harness should be flat, not twisted.



C. Buckle the harness and secure the chest clip.





D. Tighten the harness so it is snug against the child's body.

Be sure to pull the extra webbing from the hip areas through to the shoulders or wherever the harness tightens.

A snug harness 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.



E. Check the harness. You should not be able to pinch excess webbing at the shoulder once the harness is tightened. This is called the pinch test.



F. Position the chest clip at armpit level.





ACTIVITY—HARNESSING IN FORWARD-FACING CAR SEATS

1. Using car seats and a doll, practice adjusting the harness height and buckle for forward-facing use.
   - Harness the doll according to the car seat instruction manual.
2. Have an Instructor check and approve the harnessing adjustment.
   - Be prepared to explain how the harness height and buckle are adjusted on the car seat.
   - Be ready to show the Instructor how to tighten and loosen the harness on the car seat.

Car Seat	Harness Type	Number of Buckle Slots
Convertible, Combination or All-in-One Car Seat	☐ Rethread (with splitter plate) ☐ No-Rethread (with height adjuster)	

Other Restraint Types—Harnesses and Vests

In the field, you may come across a child restrained by a harness. Some manufacturers may refer to harnesses as vests.

- Harnesses/vests must meet FMVSS 213 (FMVSS 213b after December 5, 2026) and be clearly labeled.
- Harnesses/vests may be used:
  - When there is only a lap belt available in the vehicle and a conventional car seat is not available.
  - For children with behavioral issues, above 65 lbs. (29.5 kg) or other situations when a conventional car seat cannot be used.



Harness/vest with lap belt and tether

Harnesses/vests must be used with a 2-point seat belt, tether and crotch belt.

- Tether use is required.
  - If the tether is not used, the harness/vest is considered a seat belt positioner only.
- Harnesses/vests are required to have crotch belts.
  - If a crotch belt is not used, the harness/vest is considered misused.
- Lower anchor attachment systems are not required for harnesses/vests.
  - Manufacturers may add them to harnesses/vests voluntarily.

TECH TIP

Some harnesses/vests are made for school bus use only.

Check the harness/vest manufacturer instructions for use guidelines.

In Canada, harnesses and vests are only available to children with specific transportation needs. Consult the child's healthcare team for more information.

Seat Belt Positioners

- A seat belt positioner is a product that is marketed to alter the position of a seat belt on a child.
  - Seat belt positioners are not subject to FMVSS 213 (FMVSS 213b after December 5, 2026).
  - Manufacturers are not allowed to label seat belt positioners with the FMVSS 213 statement: "This child restraint system conforms to all applicable Federal motor vehicle safety standards."



LEARN • PRACTICE • EDUCATE—COMMON CAREGIVER QUESTIONS

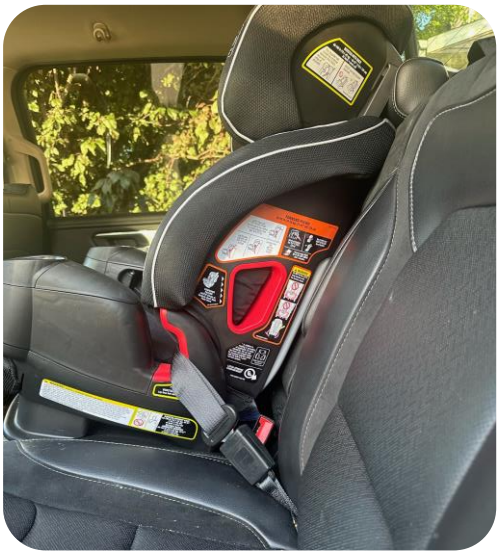
Practice answering these common caregiver questions.

- My child is two years old and weighs 39 lbs. (17.7 kg). Which car seat should I buy?
- My child is five years old and weighs 53 lbs. (24 kg). How do I know when they are too big for their car seat?

Practice • Spot Misuse

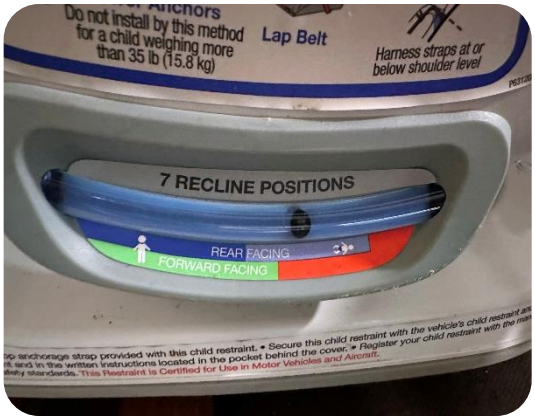
Can you spot misuse in these photos? The images may reveal selection, securing or installation errors. Write your observation beneath the image. You will find an answer key in the Appendix.

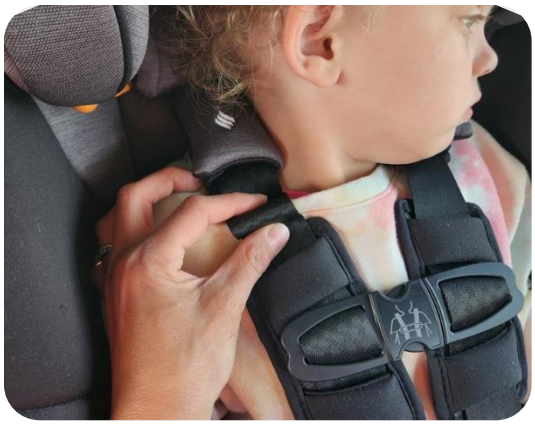









Do not install by this method
for a child weighing more
than 35 lb (15.8 kg)
Lap Belt
Harness straps at or
below shoulder level
7 RECLINE POSITIONS
REAR FACING
FORWARD FACING







Progress Check

1 How should the harness be positioned at the shoulders for a forward-facing child?

TG PAGE(S) ↓

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

TG PAGE(S) ↓

3 How do you test for tightness of a forward-facing car seat installation?

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4 When should you use a tether with a forward-facing car seat?

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ACTIVITY—INSTALL FORWARD-FACING CAR SEATS

1. Complete the installations as indicated on the following chart.
2. Have an Instructor check and approve each installation.
   - Be prepared to explain how the car seat is secured in the vehicle including how to route and secure the tether.

Installation	Lap-and-Shoulder Belt with Tether*	LATCH/UAS and Tether
Convertible or All-in-One Car Seat in the Forward-Facing Mode		
Combination Car Seat Using the Harness		

*** Use a lock-off for at least one installation.**



ACTIVITY—EXAMINE CAR SEAT MISUSE

1. Carefully examine the information provided about the child's age, weight and height.
2. Check the general use guidelines on the labels on the car seats as well as the provided instruction manuals.
3. Take notes on what you discover regarding misuse for each scenario.
4. Use the checklist provided to record your answers for two of the scenarios.

	Scenario #1	Scenario #2
1. What type of car seat is used?	☐ Infant Car Seat ☐ Convertible ☐ All-in-One ☐ Combination	☐ Infant Car Seat ☐ Convertible ☐ All-in-One ☐ Combination
2. Does the child meet the car seat age, weight and height requirements?	☐ Yes ☐ No	☐ Yes ☐ No
3. Is the harness routed correctly?	☐ Yes ☐ No	☐ Yes ☐ No
4. Is the harness snug enough?	☐ Yes ☐ No	☐ Yes ☐ No
5. Is the chest clip positioned correctly on the child?	☐ Yes ☐ No	☐ Yes ☐ No
6. Are any non-approved products used?	☐ Yes ☐ No	☐ Yes ☐ No

MODULE VIDEOS

- Forward-Facing Car Seat Installations
- Securing a Child in a Forward-Facing Car Seat
- How to Install a Forward-Facing Car Seat
- Incorrect Seat Belt Routing and No Tether
- Loose Lower Anchors and No Tether
- LATCH Challenges: Flexible Lower Anchor Attachment System—Technicians in the Field

10

Booster Seats and Seat Belts

In this module, we will answer:



- How do booster seats help to protect children?
- What are the different types of booster seats?
- What are best practices for booster seat use?
- What are the steps for correct use of booster seats?
- What are best practices for seat belt use?
- What possible booster seat and seat belt misuse do I need to be aware of?



WORD WATCH

The following terms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

backless booster seat
built-in booster seat
high-back booster seat
seat belt syndrome
shoulder belt guide
shoulder belt height adjuster

ABOUT THIS MODULE

Booster seats should be used by children once they outgrow their forward-facing car seat's weight or height limit. Booster seats should be used until children are big enough and mature enough to use a seat belt correctly.

Why Booster Seats are Important

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

- The pelvic bone structure is not fully developed until the end of the teenage years.
  - The developing pelvis of a child lacks the structure needed to keep a lap belt correctly positioned.
  - When a lap belt rests on the child's soft stomach rather than bones, it increases the risk of severe abdominal and spinal cord injuries 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. Doing so is dangerous and removes the upper body protection provided by a correctly used seat belt.

SEAT BELT SYNDROME

Seat belt syndrome describes a group of injuries from incorrect use of a lap belt.

- These injuries occur when the lap belt goes over soft tissue rather than bone.
- It can be the result of the occupant's body folding in half over the lap belt during a frontal crash.
- When an occupant is secured only at the hips or waist, without restraining the upper body, the occupant's head is more likely to contact their knees and/or the interior of the vehicle, leading to serious head and neck injuries.



- Seat belt syndrome injuries typically include severe abdominal injuries and/or fractures of the lower spine.



Incorrect placement of lap belt on child slouching on vehicle seat



Correct placement of lap belt on child correctly seated on vehicle seat

How Booster Seats Help to Protect Children

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

1. A booster seat raises and positions a child, so the lap-and-shoulder belt fits the child correctly.
2. The lap belt should lie across the child's hips and upper thighs.
3. The shoulder belt should lie across the child's chest, touching the center of the child's shoulder.



Booster seats must always be used with lap-and-shoulder belts, not lap belts.

Types of Booster Seats

There are two types of booster seats.

High-Back Boosters



Backless Boosters



- All-in-one car seats and combination car seats also have a booster mode—high-back, backless or both—depending on the specific model.



Combination car seat in high-back booster mode



All-in-one car seat in backless booster mode

- Although rare, some vehicles have a booster seat built into the vehicle seat.



Built-in booster seats (Image courtesy of Volvo: media.volvocars.com)



Always check the labels on the car seat or booster seat for the age, weight and height ranges for booster seat use.

Caregivers should never use a booster seat outside the age, weight or height limits for that booster seat.



HIGH-BACK BOOSTER SEATS

A high-back booster seat is a booster seat with a backrest.

A high-back booster seat:

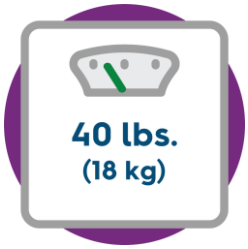
- Supports a child's head, neck and back.
- Provides side impact protection.
- Provides guides for the lap-and-shoulder belt.
- May ease the transition from a car seat with a harness by providing a similar seating environment.



- A high-back booster is recommended for vehicles that have low seatbacks or do not have head restraints.
  - Some high-back booster seats must have full support from the vehicle seat.

Weight Range

- High-back booster seats have a minimum age requirement of 4 years and a starting weight of 40 lbs. (18 kg).



- High-back booster seats can accommodate children up to 100 lbs. or more (45.4 kg or more).



Check the booster seat instruction manual for detailed use information including age, weight and height limits.

High-Back Conversion to Backless

- Some high-back booster seats can be converted to backless booster seats.

Installing/Removing Seat Back

To Remove the Seat Back:

Step 1

Facing the front of this booster seat, tilt this booster seat counter-clockwise, resting it on its side, as shown in **Figure 69**.

Step 2

Locate the Seat Back Release Strap on the bottom right side of seat.

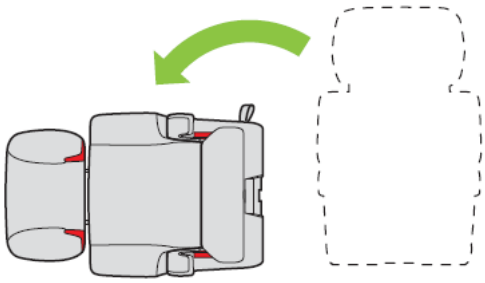


Figure 69

Step 3

While holding the top of the Seat Back, pull and hold the Release Strap and then slide the Seat Back out of the Seat Base, as shown in **Figure 70**.

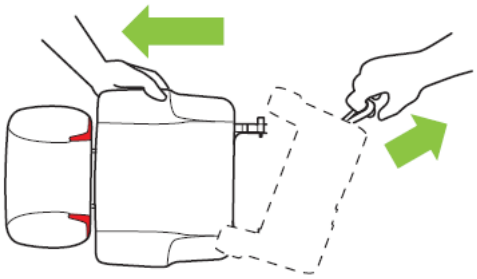


Figure 70

Step 4

Once the Seat Back leg is released, complete removal by rotating the opposite Seat Back leg out of opening in the Seat Base.

Booster seat instructions showing how to convert from a high-back booster to backless booster.

In Canada, the required information in RSSR (minimum weight, installation diagram, weight and height range) must be visible at all times even while the booster seat is occupied by the child.

BACKLESS BOOSTER SEATS

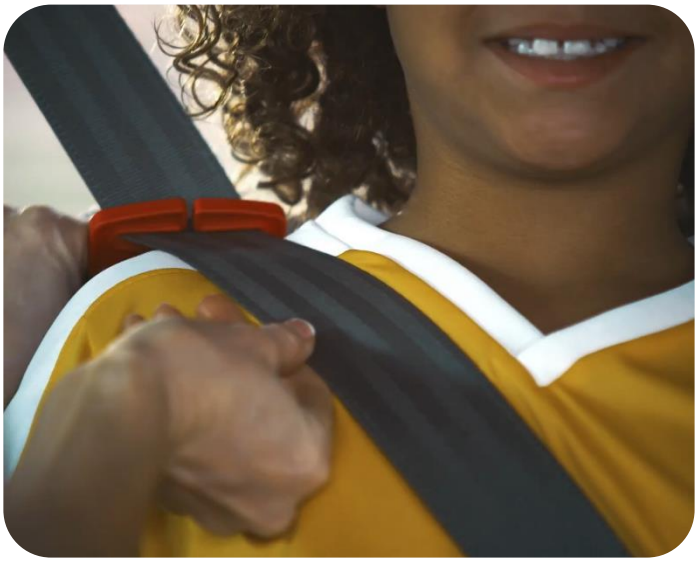
A booster seat without a backrest is referred to as a backless booster seat.

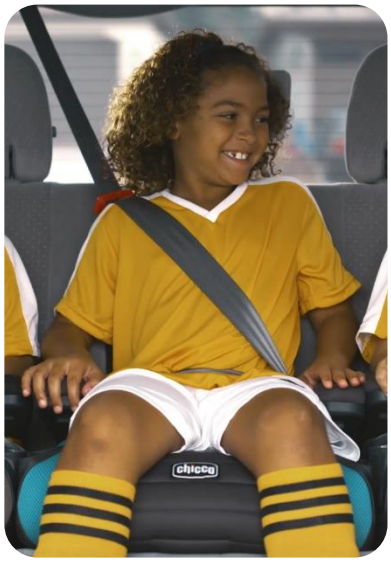
- Booster seat manufacturers sometimes refer to backless booster seats as no-back booster seats.

Check the booster seat instruction manual for detailed use information including age, weight and height limits.

- When using a backless booster seat, the vehicle seatback and head restraint provide the head, neck and back support.
- Use a backless booster seat only in seating positions that provide head support up to at least the tops of the child's ears.
  - If the tops of the child's ears are above the vehicle seatback or head restraint, a high-back booster should be used.
- Most backless booster seats come with a shoulder belt guide to adjust the shoulder belt height on the child, if needed.
- Use only the shoulder belt guide provided with the booster seat.

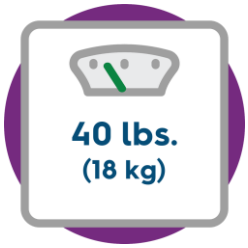






Weight Range

- Backless booster seats have a minimum age requirement of 4 years and a starting weight of at least 40 lbs. (18 kg).



- Backless booster seats can accommodate children 100 lbs. or more (45.4 kg or more).



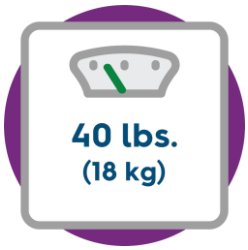
ALL-IN-ONE AND COMBINATION CAR SEATS

An all-in-one car seat or combination car seat can be used in the booster mode once a child reaches the highest weight or height limit for the use in forward-facing mode with a 5-point harness.

- Some all-in-one and combination car seats have both high-back and backless booster seat modes.

Weight Range

- All-in-one and combination car seats have a minimum age requirement of 4 years and a starting weight of at least 40 lbs. (18 kg) when used in the booster mode.



- All-in-one and combination car seats can accommodate children up to 100 lbs. or more (45.4 or more kg) in the booster mode.

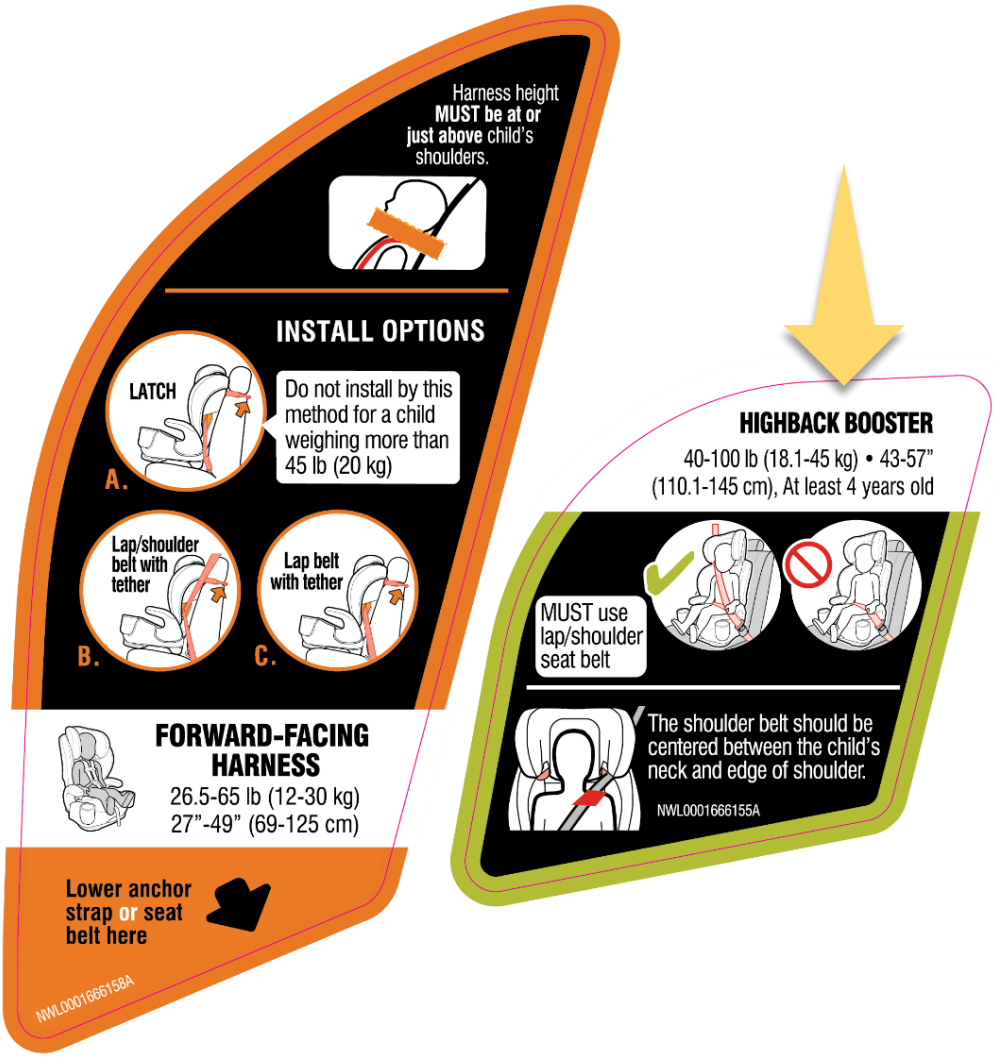




Check the car seat instruction manual for detailed information on using the car seat in booster mode including age, weight and height limits.



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



Labels on a combination car seat showing instructions for different modes of use

BUILT-IN BOOSTER SEATS

- A built-in booster seat can be raised from a rear vehicle seat cushion when needed and stored when not in use.
- Some vehicle manufacturers may refer to built-in booster seats as integrated booster seats.
- Built-in booster seats do not have an expiration date.



Built-in booster seat (Image courtesy of Volvo: media.volvocars.com)

Check the vehicle owner's manual for detailed use instructions including weight and height limits.

Best Practice Recommendations

Best practice is for a child to ride forward-facing in a car seat with a harness for as long as possible until reaching the highest weight or height limit for the car seat.

- Once a child outgrows a forward-facing car seat's weight or height limit, best practice is for the child to move to a booster seat until the child fits into a seat belt correctly.

Caregivers may have difficulty determining when it is time to move their child from a forward-facing car seat to a booster seat.

- The following guidelines may help caregivers in making this decision.

GOOD	BETTER	BEST
The child is moved to a booster seat as soon as the lowest age, weight and height requirements for that booster seat are met, even though the child is within the weight and height limits for their forward-facing car seat. State/provincial/territorial law is being met.	The child is moved to a booster seat when above the lowest age, weight and height requirements for that booster seat, even though the child is within the weight and height limits for their forward-facing car seat. State/provincial/territorial law is being met.	The child uses a forward-facing car seat until reaching the highest weight or height limit for that car seat before moving to a booster seat. State/provincial/territorial law is being met.

Example

The car seat label shows the weights and heights for forward-facing and booster seat modes (right).

- The child is 5 years old, weighs 50 lbs. (22.7 kg) and is 45 inches (114.3 cm) tall.
- Following the **Best** guideline above, the child should remain harnessed in the forward-facing mode until they reach 65 lbs. (29.5 kg) or 49 inches (125 cm).



FORWARD-FACING MODE
26.5–65 lbs. (10.1–29 kg)
29–49 in (73.6–125 cm)

BOOSTER SEAT MODE
40–100 lbs. (18–45.4 kg)
43–52 in (110.1–132.1 cm)

CONVERSATIONS WITH CAREGIVERS

Sometimes caregivers choose not to use a booster seat for their child or their child resists using a booster seat when one is appropriate.

- Be open to listening to the reason for the caregiver's concerns.
- Respectfully start a conversation about safety in the vehicle. Explain why riding in a booster seat is so important.
- To help the child with acceptance, encourage caregivers to refer to these seats as booster seats instead of car seats.
- Encourage the caregiver to involve the child in the selection of the booster seat.



Conversation with a caregiver

TECH TIP

When possible, include children in the conversation about using booster seats. Highlight how booster seats help the seat belt to fit better and allow them to see better out the vehicle windows.



LEARN • PRACTICE • EDUCATE—MOTIVATE FOR BOOSTER SEAT USE

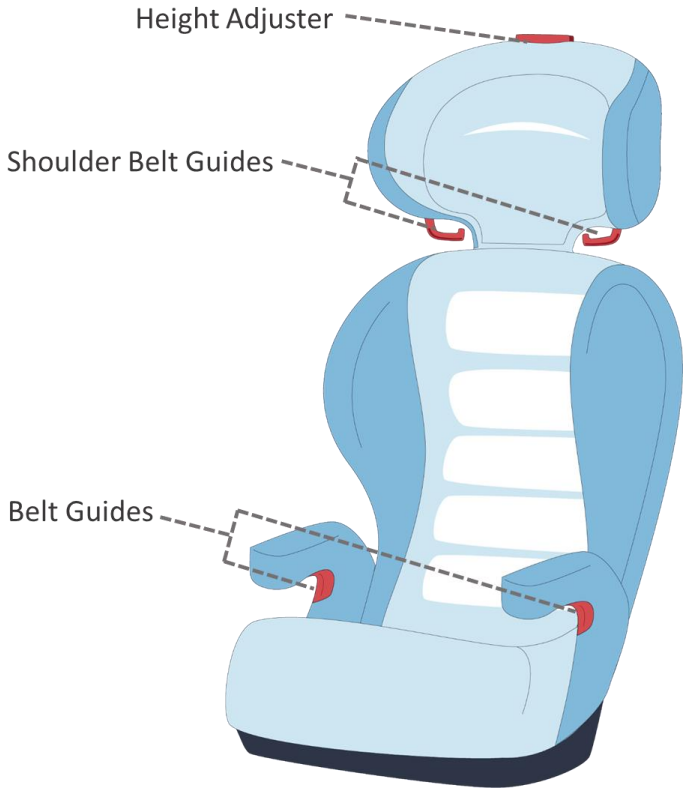
Practice how you might motivate a caregiver and their 8-year-old child to use a booster seat instead of moving the child to a seat belt.

Parts of Booster Seats

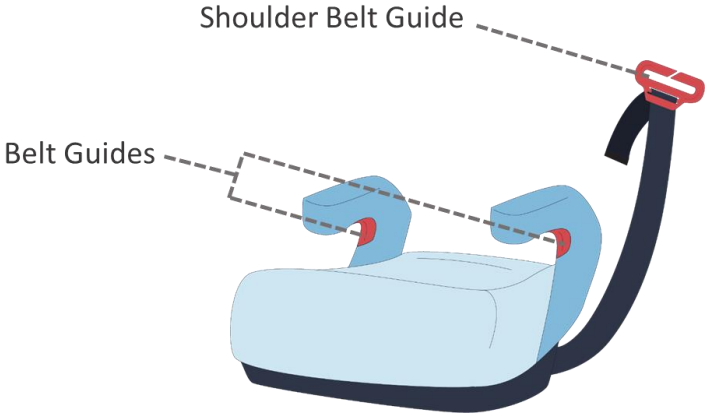
It is important to be familiar with the parts of booster seats and their functions.

The following diagrams show the common parts found on booster seats. Be sure to look up any of the parts referenced in your **Glossary of Terms** in the Appendix if needed.

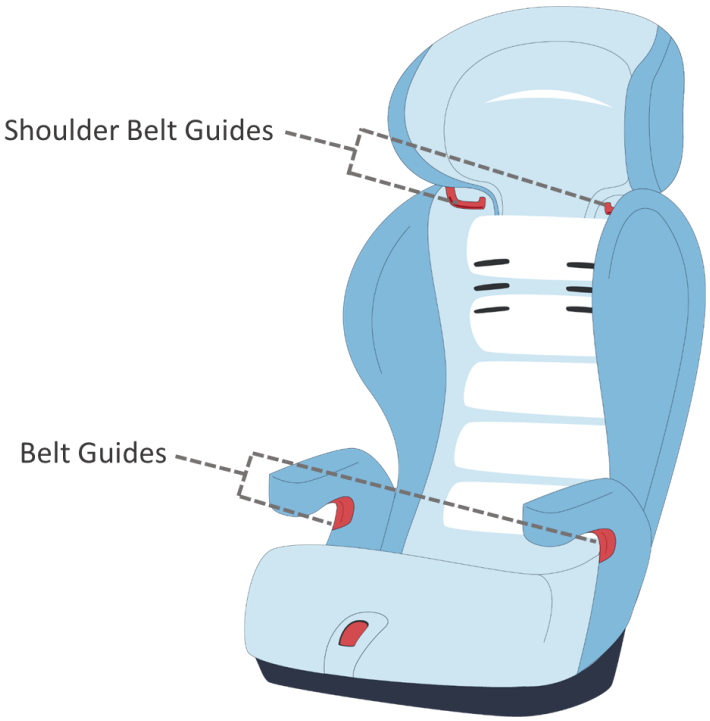
High-Back Booster Seat



Backless Booster Seat



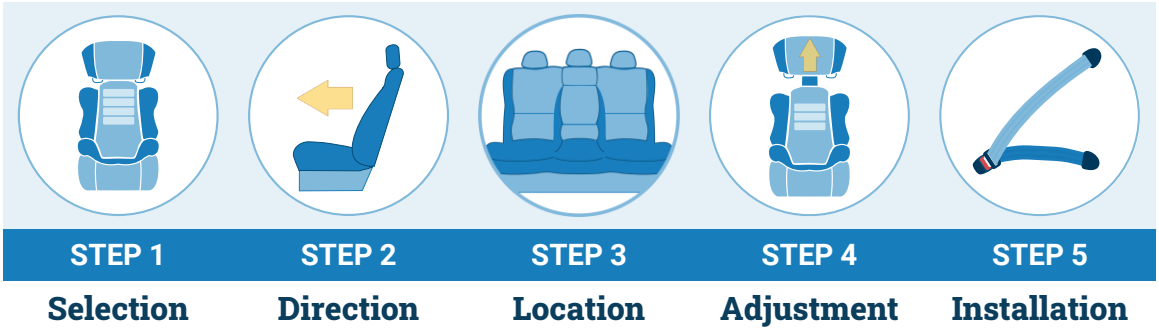
Combination Car Seat in Booster Mode



Parts on an all-in-one car seat are similar to those on a combination car seat.

Steps for Booster Seat Use

The steps that follow can be applied to all types of booster seats.





STEP 1: SELECTION

Choose the right booster seat.

For the Child

- The booster seat is appropriate for the child's age, weight, height and developmental level.
  - Booster seat manufacturers require a child to be at least 4 years old to use a booster seat.
  - The child must be developmentally ready to sit correctly in a booster seat.
- When in the booster seat, the top of a child's ears must be below the top of the booster seat's head restraint or the back of the vehicle seat.



Some states, provinces and territories have laws stating how long a child must use a booster seat.

For the Vehicle

- The booster seat fits in the caregiver's vehicle.



For the Caregiver

- The caregiver can use the booster seat correctly every time.



In 2021, the National Survey of the Use of Booster Seats (NSUBS) found that the use of appropriate child restraint for children 4 to 7 years old was 73.2% (42.2% were in forward-facing car seats and 31.0% were in booster seats), an increase from 69.5% in 2019.

The forward-facing car seat use increased significantly to 42.2% in 2021 from 32.5% in 2019. Booster seat use decreased to 31.0% in 2021 from 37.0% in 2019, which was not a significant decrease.

In 2021, 26.7% of children 4 to 7 years old were not being properly restrained (16.1% were restrained by seat belts and 10.6% were unrestrained), a decrease from 30.4% in 2019.[1]

[1] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813396





STEP 2: DIRECTION

Face the booster seat the right way.

- A booster seat faces the front of the vehicle.



STEP 3: LOCATION

Choose an appropriate seating position in the vehicle.

- Some seating positions in a vehicle may not work for booster seat use.
- Always use a seating position with a lap-and-shoulder belt.
  - If the selected seating position only has a lap belt, choose a different seating position with a lap-and-shoulder belt.
- Consider where other passengers need to sit in the vehicle.
  - Some booster seats may not fit in seating positions next to other car seats or booster seats.



Vehicle Seating Positions Dos and Don'ts



Mercedes-Benz 2022 E-Class Wagon

Never use booster seats on side-facing jump seats or vehicle seats that face the rear of the vehicle.

Booster seats must be used on forward-facing vehicle seats.



Cargo areas should not be used for passengers.

Vehicle Head Restraints

WITH BACKREST: Proper positioning of the booster seat may require adjusting or removing the vehicle head restraint to allow the backrest to lie flat against the vehicle seat back. If the vehicle head restraint cannot be adjusted or removed, a different seating position or different booster seat should be used.

WITHOUT BACKREST: Use only as a backless booster when used in a seating position with a vehicle head restraint. See your vehicle owner's manual for booster seat positioning instructions.



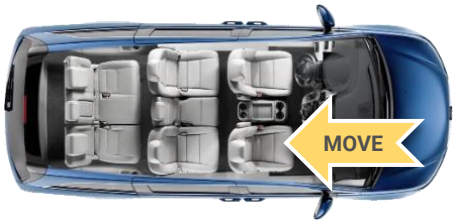
- Check if vehicle head restraint pushes forward the top of the booster seat.
- If it does, check both the booster seat and vehicle manufacturers instructions for guidance.

Consideration should be given to air bag locations.

- If there is a rear seat frontal air bag in the seating position, check the vehicle owner's manual to see if it must be turned off.
- If a child who rides in a booster seat must sit in the front seat, move the vehicle seat as far away from the dashboard and air bags as possible while still maintaining correct seat belt fit.



Check vehicle owner's manual for use of a booster seat in a seating position with a rear seat frontal air bag.

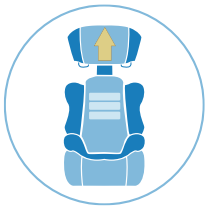


Move the vehicle seat as far back from the dashboard and air bags as possible with a booster seat in the front seat.

Always follow back seat law, if applicable.

- If applicable, determine if the booster seat can be used with an inflatable seat belt.





STEP 4: ADJUSTMENT

Adjust the booster seat to fit the child correctly.

It is important to adjust the booster seat according to the booster seat manufacturer's instructions.

Adjust the Booster Seat to Fit the Child

1. **Have the child sit in the booster seat with their back and bottom flat against the booster back and bottom.**

2. **As appropriate, adjust the booster seat backrest or shoulder belt guide so the bottom of the shoulder belt guide is at or slightly above the top of the child's shoulders.**





When using a backless booster, check the vehicle shoulder belt fit on the child. If the shoulder belt fits correctly on the child, it may not be necessary to use a shoulder belt guide.





STEP 5: INSTALLATION

Secure the booster seat to the vehicle seat.

- Most booster seats rest on the vehicle seat and are not installed for use.
- The child's weight and the vehicle lap-and-shoulder belt hold the booster seat in place.
- Some booster seats have a lower anchor attachment system to position and help keep the booster seat in place.
  - Lower anchor attachment systems are not required on booster seats.
  - Booster seat manufacturers may add them to their booster seats voluntarily.
- Booster seats converted from car seats with 5-point harnesses will have a lower anchor attachment system and tether for use in the car seat mode.
  - Some car seat manufacturers permit the use of the lower anchor attachment system and/or tether when the car seat is used in booster mode.





Check the car seat instruction manual for specific use information including use of the lower anchor attachment system and/or tether.

Lower anchor weight limits do not apply to booster seat use.

The vehicle lap-and-shoulder belt restrains the child and manages the crash forces in the event of a crash.

The lower anchor attachment system secures the booster seat.

1 **Prepare the booster seat for installation.**

- Store the unused harness, lower anchor connectors and tether per the car seat manufacturer's instructions.

2 **Place the booster seat on the selected seating position in the forward-facing direction.**





3 **As appropriate, adjust the vehicle head restraint to support the child's head or improve booster seat fit in the vehicle.**

- If the vehicle head restraint pushes the top of a high-back booster seat forward, try to adjust the head restraint to a different position. If that does not work, it may be necessary to remove and store the head restraint, if allowed by the vehicle manufacturer and booster seat manufacturer.
- For a child using a backless booster seat, the head restraint must be adjusted to support the child's head to at least the top of a child's ears.

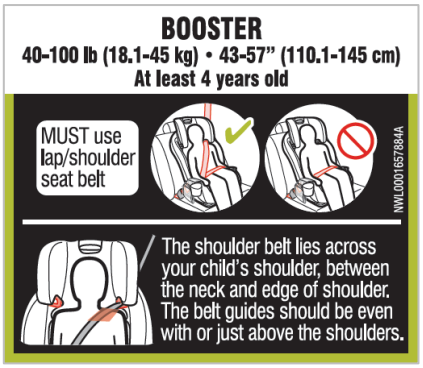


4 **If applicable, secure and tighten the lower anchor attachment system and/or tether.**



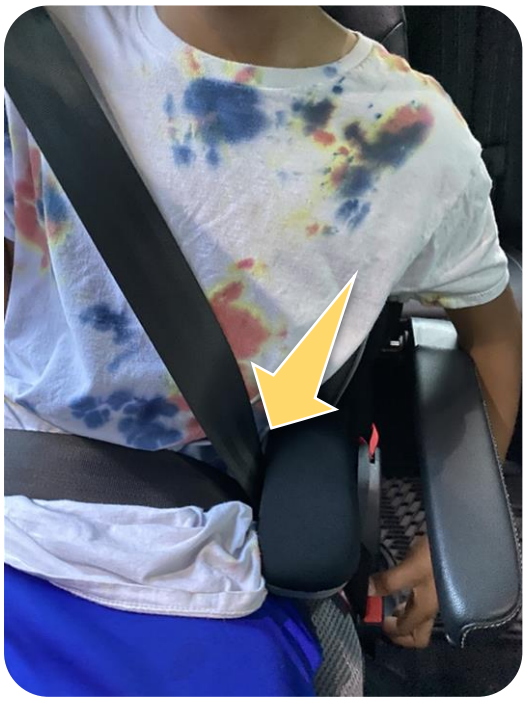
5 **Determine the correct seat belt path.**





6 **Secure the child in the booster seat.**

- Route the lap-and-shoulder belt over the child and through the belt guides.
- For booster seats with arm rests, check the booster seat manufacturer's instructions for routing the seat belt. Typically, the lap belt is routed under the arm rests on both sides and the shoulder belt is routed under the arm rest on the seat belt buckle side.
- The seat belt should be flat, not twisted.





- The shoulder belt should be across the child's chest, touching the center of the child's shoulder.
- Typically, the seat belt is left in the non-locking mode when used to secure a child in a booster seat.
- Some vehicles have built-in shoulder belt height adjusters that can be used with a backless booster seat in place of the booster seat's shoulder belt guide, if permitted by the booster seat manufacturer.





Check both the booster seat instruction manual and vehicle owner's manual to determine if locking the seat belt is permitted as an option with booster seat use.

TECH TIP

An unoccupied booster seat should be secured in the vehicle.

If not buckled in or connected to the lower anchors, the booster seat may collide with occupants during a crash or sudden stop likely causing injuries to them.



Secure unoccupied booster seats.

ACTIVITY—INSTALL BOOSTER SEATS

1. Complete the installations as indicated on the following chart.
   - Indicate if using the lower anchors and/or tether for installation.
2. Practice securing a doll in each booster seat.
3. Have an Instructor check and approve each installation.
   - Be prepared to explain how the booster is secured in the vehicle.
   - Be ready to show the Instructor how to adjust the booster and/or the shoulder belt guide, if applicable.

Installation*	Lap-and-Shoulder Belt	Lower Anchor Attachment System or LATCH/UAS and Tether
High-Back Booster Seat		☐ Yes ☐ No
Backless Booster Seat		☐ Yes ☐ No
All-in-One or Combination Car Seat in the High-Back Booster Mode*		☐ Yes ☐ No

*** Store or remove the harness on the all-in-one car seat or combination car seat.**

Children in Seat Belts

Vehicle seat belts can be used to safely secure children when the child fits in the seat belt correctly.





Both images show correct seat belt fit for children.

BEST PRACTICE RECOMMENDATIONS

Best practice is for a child to ride in a booster seat until they fit into a seat belt correctly.

Once a child outgrows a booster seat's weight or height limit, best practice is for the child to use a rear seating position with a lap-and-shoulder belt.



SEAT BELT READINESS

Seat belt fit differs between vehicles and seating positions in each vehicle.

Seat belt fit should be checked for each seating position where a child might ride.

- Caregivers may not know how to tell if their child fits correctly in a vehicle seat belt.
- The checklist on the following page can help caregivers check seat belt fit on their child.

Checklist for Seat Belt Fit

If the answer to any of these questions is no, the child should remain in a booster seat in that seating position.

1. Can the child keep their back against the vehicle seatback?
2. Can the child keep their knees naturally bent over the edge of the vehicle seat without slouching?
3. Can the child keep their feet flat on the floor?
4. Does the lap belt lie snugly across the upper thighs, low on the hips, not the stomach?
5. Does the shoulder belt lie snugly across the shoulder and chest, and not across the neck or face?
6. Is the child able to stay in position for the entire ride?



Educating Caregivers about Seat Belts

Whenever possible, a child should sit in a seating position with a lap-and-shoulder belt rather than a lap belt.





If the tops of the child's ears are above the vehicle seatback or head restraint, check to see if the head restraint can be adjusted. If not, the child will need to sit in a different seating position.

Children under 13 years old should ride in the rear seat.

Always follow back seat law, if applicable.





Children should not lean or rest against the inside of vehicles where air bags would open in a crash.

Seat belts must never be shared.





The shoulder belt should be across the child's chest, touching the center of the child's shoulder.

Use the vehicle shoulder belt height adjuster to adjust the shoulder belt fit, if needed.

Remember that all unrestrained objects—including a backpack—may collide with occupants during a crash or sudden stop and, ideally, should be stored in the cargo area.



TECH TIP

Emphasize to caregivers that they are important role models for correct seat belt use.

Practice • Spot Misuse

Can you spot misuse in these photos? The images may reveal booster seat selection errors, booster seat misuse, or seat belt misuse. Write your observation beneath the image. You will find an answer key in the Appendix.

















ACTIVITY—IDENTIFY SEATING ARRANGEMENTS

Let's practice!

- Using the information provided below, select where each person can sit safely.
- Indicate the appropriate car seat or booster seat, as applicable.

  - Caregiver #1/Driver
  - Caregiver #2
  - Two-month-old, 11 lbs. (5 kg)
  - Three-year-old, 36 lbs. (16.3 kg)
  - Eight-year-old, 72 lbs. (32.7 kg)

TECH TIP

Seating position considerations include:

- **Type of car seat or booster seat**
- **LATCH/UAS and tether availability in the vehicle**
- **Lower anchor weight limits for car seats**
- **Air bag locations**
- **Other passenger seating needs**
- **Caregiver choice**
- **Car seat manufacturer recommendations**
- **Vehicle manufacturer recommendations**

FRONT ROW OF VEHICLE		
DRIVER Frontal and side air bags Lap-and-shoulder belt		**FRONT PASSENGER** Frontal and side air bags Lap-and-shoulder belt

REAR ROW OF VEHICLE		
REAR PASSENGER 1 Side air bags Lap-and-shoulder belt LATCH/UAS and Tether	**REAR PASSENGER 2** Lap-and-shoulder belt Tether anchor	**REAR PASSENGER 3** Side air bags Lap-and-shoulder belt LATCH/UAS and Tether

Progress Check

1 Why is it important to use booster seats?

TG PAGE(S) ↓

2 Describe the correct placement of a lap-and-shoulder belt.

TG PAGE(S) ↓

3 When is a child ready to use a vehicle seat belt?

TG PAGE(S) ↓

MODULE VIDEOS

- Simulation of Seat Belt Syndrome
- Crash Test: Booster Seat Efficacy
- How Booster Seats Protect Children
- Types of Booster Seats: Summary
- Booster Seat Adjustment and Fit
- How to Use a Booster Seat
- When your Child is Ready for a Seat Belt

11

Other Vehicles

In this module, we will answer:



- What is compartmentalization on a school bus?
- What are current recommendations for transporting children safely in school buses?
- What safety precautions are specific to 15-passenger vans?
- How do caregivers safely travel with children on airplanes?
- What issues are associated with safe transportation of children in emergency vehicles?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

aviation child safety device (ACSD)

child safety restraint system (CSRS)

compartmentalization

retrofitted

ABOUT THIS MODULE

We have learned about transporting children in passenger vehicles. Now it is time to cover some basics about how to keep children safe in other types of vehicles.

School Buses

School buses have the best safety record of all forms of ground transportation. Less than 1% of all deaths in motor vehicle crashes involve children on school transportation vehicles.[1]







- School buses are larger and heavier than most other vehicles. Crash forces are distributed throughout a school bus and experienced by the occupants differently than in passenger vehicles.
- School buses are highly visible and include safety features such as flashing red lights, cross-view mirrors and stop-sign arms.[1]
- School buses are more crashworthy than other vehicles. They have high crush standards and rollover protection features.[1]
- Drivers have special licensing, additional training and take predictable routes.[1]



Designed to be highly visible



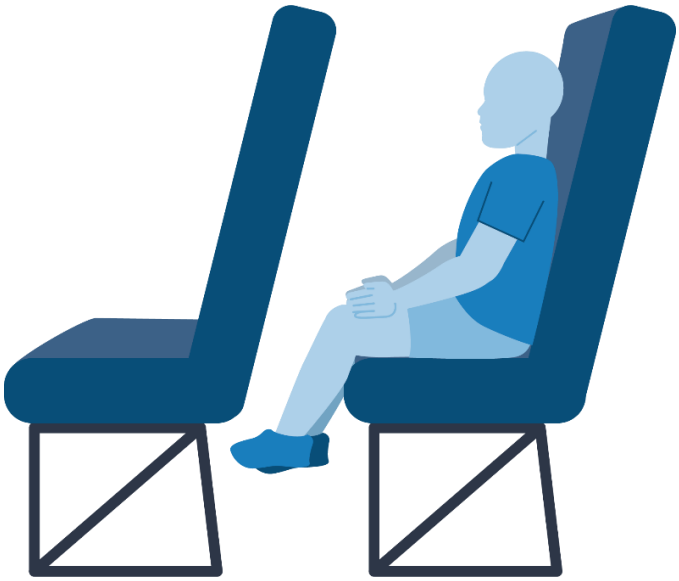
Reinforced frame for crash protection

[1] https://www.nhtsa.gov/road-safety/school-bus-safety#the-topic-bus-safety

- A passive occupant protection system known as compartmentalization is required on school buses per Federal standards in the U.S. and Canada.
  - School bus seating must face forward and meet regulatory requirements for seatback strength, flexibility and height as well as the space between rows.



- The combination of energy-absorbent seatbacks and narrow row spacing creates a small area—or compartment—where occupants are confined in a frontal or rear-end crash.



Rows are spaced within specific regulatory limits



Compartmentalization during a frontal crash

SEAT BELTS ON SCHOOL BUSES

Most school buses do not have seat belts.

When present, it is best practice for school-age passengers to use a seat belt. Unlike compartmentalization, seat belts provide protection in side impact and rollover crashes.

Seat belts can also be used to install car seats.



United States

- U.S. Federal standards require small school buses with a gross vehicle weight rating (GVWR) of 10,000 lbs. (4,536 kg) or less to have seat belts.
  - If the school bus was built after October 2011, it must have lap-and-shoulder belts that meet the lockability requirement for car seat installation.
- U.S. Federal standards do not require school buses with a GVWR of greater than 10,000 lbs. (4,536 kg) to have seat belts.
- Some states require all school buses to have seat belts.
- Some existing school bus seating can be retrofitted with seat belts.
  - Check with the school bus manufacturer for guidance.

In Canada, Federal regulations do not require seat belts on any school bus. Each province/territory manages their own provincial/territorial regulations.

As of September 1, 2020, new school buses must meet technical requirements for how to install lap-and-shoulder belts on school buses, if they are installed. These technical requirements, which do not allow the installation of lap belts, make sure that the seats belts are installed correctly and do not compromise the compartmentalization design.

LOWER ANCHORS AND TETHERS ON SCHOOL BUSES

Some school buses have lower anchors and/or tether anchors for installing car seats.

- In the U.S., Federal standards require school buses manufactured in 2003 or later with a GVWR of 10,000 lbs. (4,356 kg) or less to have a set of lower anchors in two seating positions. Tether anchors are not required.
  - Some school bus seats have tether anchors built into the seat frame.
  - Some existing school bus seats can be retrofitted with LATCH. Check with the school bus manufacturer for guidance.

In Canada, as of April 1, 2007, Federal standards require all school buses to have lower anchors and tether anchors, with quantity based on the number of designated passenger seating positions.

Designated Seating Positions	Required Lower Anchor and Tether Anchor Locations
Up to 24	2
25 to 65	4
66+	8



Lower anchors on a school bus seat



Tether anchor on a school bus seat

RECOMMENDATIONS FOR ADDITIONAL OCCUPANT PROTECTION ON SCHOOL BUSES

Birth to kindergarten children riding on school buses and children with certain disabilities cannot be protected by compartmentalization alone.



- A NHTSA guideline recommends that all pre-school age children be appropriately restrained in a car seat or other child safety restraint system (CSRS) meeting FMVSS 213 when they ride on a school bus.[2]
- Booster seats are not used on school buses. School bus seats and lap-and-shoulder belts on school buses are designed to fit school-age children.
- Children with disabilities should be assessed for specific transportation needs. When deemed necessary, they should have a written Individual Transportation Plan that outlines how to transport them safely.
- When children are transported by Head Start, a U.S. early child development program, they must ride in a school bus or allowable alternative vehicle using a car seat or other child safety restraint system meeting FMVSS 213.



Children using school bus only CSRS

Transport Canada recommends that children on a school bus who weigh less than 40 pounds (18 kg) or are younger than approximately 4½ years old be correctly secured in a car seat that is appropriate for the child's weight and height.

TECH TIP

It is important to know and understand the state, provincial or territorial law concerning transporting pre-school age children—those birth to kindergarten—and whether car seats or seat belts are required on school buses by state, province, territory or local education authority.

[2] https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-10/Guideline-Safe-Transportation-Preschool-Age-Children-School-Buses.pdf

NATIONAL TRAINING

The *Child Passenger Safety on School Buses National Training* provides an overview of the use of child safety restraint systems on school buses, with a focus on pre-school age children and children with disabilities.



Two versions are available:

- one for CPSTs and
- one for pupil transportation providers

Online, self-paced learning modules are also available in the School Bus Learning Library of the Child Passenger Safety Learning Portal at **carseateducation.org/school-bus**.

Visit cpsboard.org/school-bus for more information.

TECH TIP

To learn more about school bus safety, visit nhtsa.gov/road-safety/school-bus-safety for U.S. information and tc.canada.ca/en/road-transportation/school-bus-safety for Canadian information.



15-Passenger Vans



Some childcare providers, schools, camps and other transportation providers use 15-passenger vans to transport children.

NHTSA and Transport Canada strongly recommend—and some states and provinces/territories require—that childcare providers and schools transport children on school buses, the safest form of ground transportation, rather than in 15-passenger vans.

If a 15-passenger van is used, it should be equipped with electronic stability control—a helpful crash avoidance feature.

Since model year 2012, regulations in the U.S. and Canada have required most 15-passenger vans to have electronic stability control.

Additionally, the following safety precautions should be followed:

- Never allow more than 15 occupants to ride in a 15-passenger van.
  - Generally, it is best to load a 15-passenger van from the front to the back, leaving the rear seats empty when there are fewer than 15 occupants.
- All occupants must be correctly restrained at all times
- Avoid overloading the van with cargo and/or placing cargo on the roof.

See the vehicle owner's manual for instructions on how to choose seating locations and to find the highest combined weight allowance for passengers plus cargo.

TECH TIP

For more information on 15-passenger vans from NHTSA, visit nhtsa.gov/road-safety/15-passenger-vans. For information on 12- and 15-passenger vans from Transport Canada, visit tc.canada.ca/en/road-transportation/publications/12-15-passenger-large-vans.

Recreational Vehicles

The front seats of motorized recreational vehicles and some rear designated seating positions, depending on the class of recreational vehicle, must meet Federal standards. As a result, not all recreational vehicles are required to have seat belts in rear designated seating positions.

Caregivers should consult the vehicle owner's manual of their recreational vehicle to determine the designated seating positions for use of car seats and booster seats in their vehicle.

- Best practice is to use a towable recreational vehicle, with passengers riding correctly secured in the towing vehicle.
- When using a motorized recreational vehicle, best practice is to also take a passenger vehicle so all passengers can be transported safely.



Towable recreational vehicle with towing vehicle



Motorized recreational vehicle

Low Speed Vehicles and Golf Carts

Low speed vehicles and golf carts are not required to meet the same Federal standards as passenger vehicles.

Typically, car seat manufacturers prohibit the use of car seats and booster seats in low speed vehicles and golf carts because they may not perform as designed in a crash.



- Best practice is to use a passenger vehicle so all passengers can be transported safely.

Airplanes

The Department of Transportation's Federal Aviation Administration (FAA) and Transport Canada encourage, but do not require, the use of a car seat by children while on airplanes.[3]

- While most airlines allow children under the age of two to fly free of charge on a caregiver's lap, this is not considered best practice.
  - Turbulence or rough flying can happen with little or no warning, increasing the risk of injury to an unrestrained child.



Not considered best practice



Best practice

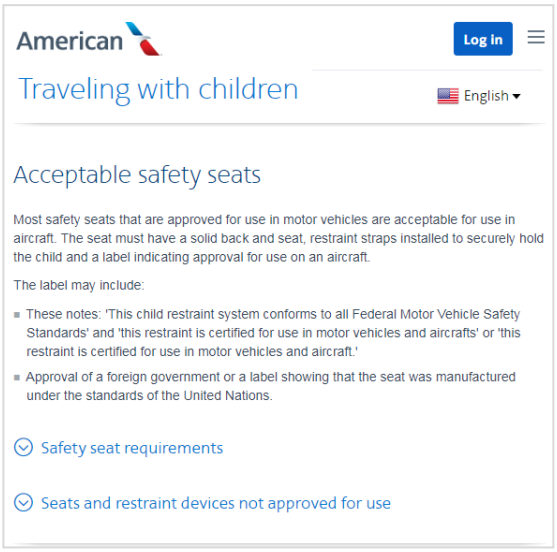
- The FAA and Transport Canada do not permit the use of booster seats or harnesses/vests made for passenger vehicles on airplanes.
  - Airplanes are not equipped with the lap-and-shoulder belts and/or anchorages needed to correctly use booster seats and harnesses/vests made for passenger vehicles.

[3] Federal Aviation Administration (FAA). Flying with children. **https://www.faa.gov/travelers/fly_children/**

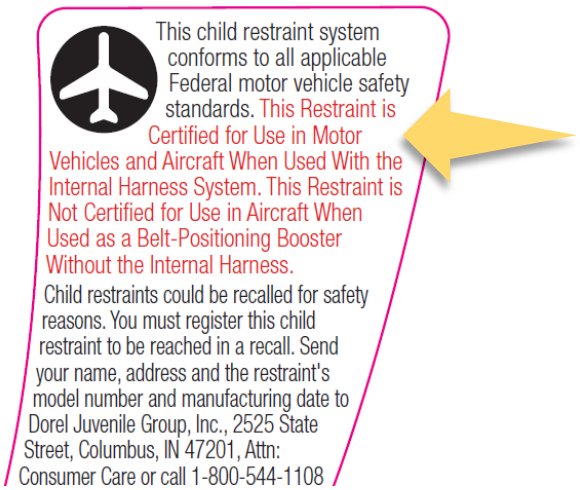
CAREGIVER REMINDERS

Prior to flying with children, caregivers should:

- Verify car seat use policies with the airline.



- In the U.S., verify the car seat has the mandatory label stating it is certified for use on aircraft.

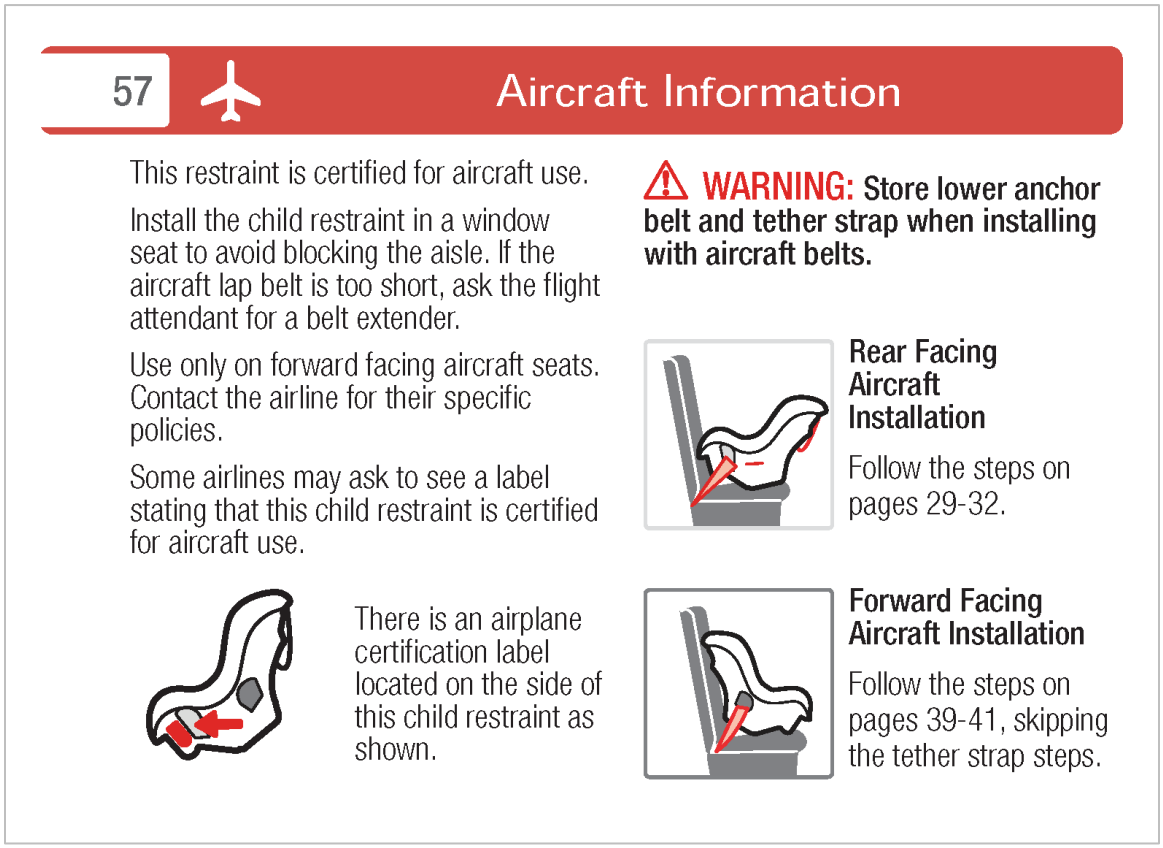


- Measure the width of the car seat.
  - A car seat should fit in most airplane seats if it is no wider than 16 inches (40 cm).

In Canada, all car seats must pass the inversion test that allows for their use on airplanes. Booster seats are not allowed on airplanes because they cannot be used with lap belts. Visit **travel.gc.ca/travelling/children/taking-children-on-a-plane#systems** for more information.

Car seat instruction manuals must address installation on airplanes. Always check the car seat instruction manual for information about use on an airplane. Some car seats have airplane-specific installation instructions.

Car Seat Instruction Manual Example



57 Aircraft Information

This restraint is certified for aircraft use.

Install the child restraint in a window seat to avoid blocking the aisle. If the aircraft lap belt is too short, ask the flight attendant for a belt extender.

Use only on forward facing aircraft seats. Contact the airline for their specific policies.

Some airlines may ask to see a label stating that this child restraint is certified for aircraft use.

There is an airplane certification label located on the side of this child restraint as shown.

WARNING: Store lower anchor belt and tether strap when installing with aircraft belts.

Rear Facing Aircraft Installation

Follow the steps on pages 29-32.

Forward Facing Aircraft Installation

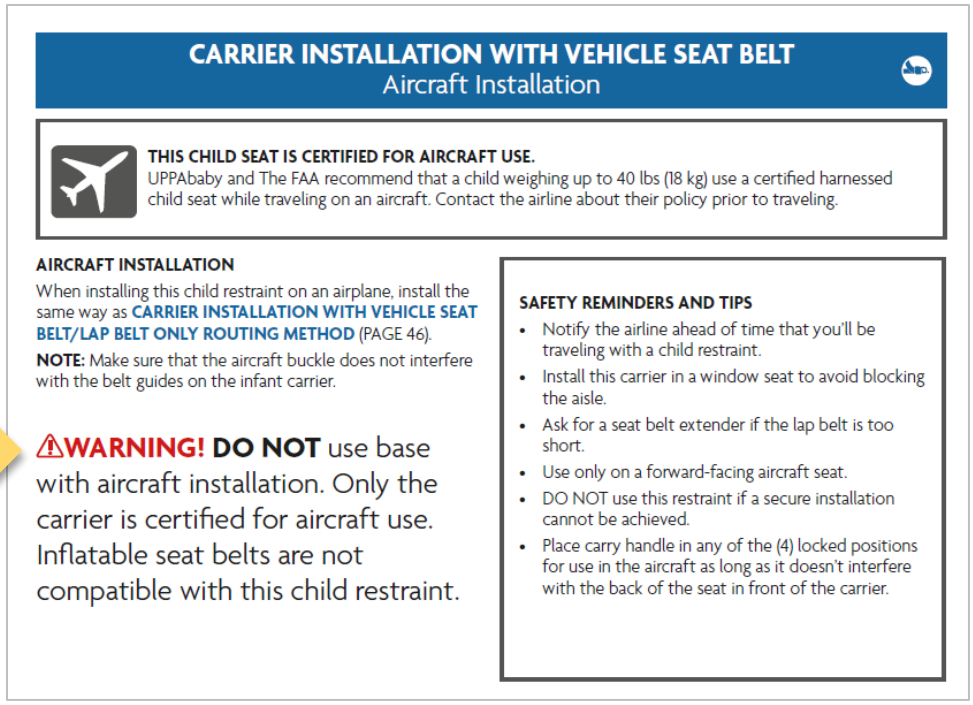
Follow the steps on pages 39-41, skipping the tether strap steps.

TECH TIP

Encourage caregivers to have access to their car seat instruction manual when traveling so they can refer to it as needed.

Carrier Alone

- Some instructions for infant car seats allow only the carrier to be installed on an airplane, not a detachable base, if provided.
- Often, it is easier and more convenient on an airplane to use the carrier alone, even when use of a detachable base is allowed.



CARRIER INSTALLATION WITH VEHICLE SEAT BELT
Aircraft Installation

THIS CHILD SEAT IS CERTIFIED FOR AIRCRAFT USE.
UPPAbaby and The FAA recommend that a child weighing up to 40 lbs (18 kg) use a certified harnessed child seat while traveling on an aircraft. Contact the airline about their policy prior to traveling.

AIRCRAFT INSTALLATION

When installing this child restraint on an airplane, install the same way as **CARRIER INSTALLATION WITH VEHICLE SEAT BELT/LAP BELT ONLY ROUTING METHOD** (PAGE 46).

NOTE: Make sure that the aircraft buckle does not interfere with the belt guides on the infant carrier.

⚠WARNING! DO NOT use base with aircraft installation. Only the carrier is certified for aircraft use. Inflatable seat belts are not compatible with this child restraint.

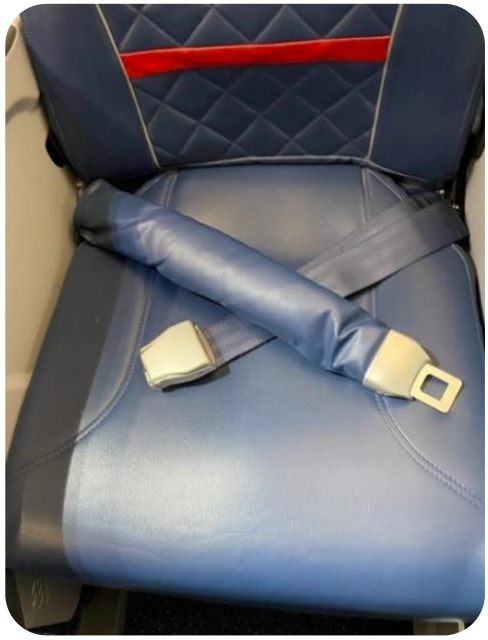
SAFETY REMINDERS AND TIPS

- Notify the airline ahead of time that you'll be traveling with a child restraint.
- Install this carrier in a window seat to avoid blocking the aisle.
- Ask for a seat belt extender if the lap belt is too short.
- Use only on a forward-facing aircraft seat.
- DO NOT use this restraint if a secure installation cannot be achieved.
- Place carry handle in any of the (4) locked positions for use in the aircraft as long as it doesn't interfere with the back of the seat in front of the carrier.

Page from infant car seat instruction manual, warning against using the detachable base on aircraft. Note the additional warning about inflatable seat belts.

Inflatable Lap Belts on Aircraft

- Some airplane seats have inflatable lap belts in certain seating positions.
  - Check the car seat instruction manual for specific information regarding installation using an inflatable lap belt, which is typically not allowed.
- In the U.S., if a car seat is unable to be installed in the assigned seating position, the flight crew must assist the family in moving a ticketed child to a seat where the car seat can be correctly installed.



Aviation Child Safety Devices

While car seat manufacturers self-certify car seats for airplane use just as they do for passenger vehicle use, the FAA and Transport Canada have the authority to approve airplane-specific child restraints called aviation child safety devices (ACSD). Both agencies have approved an ACSD, the Child Aviation Restraint System (CARES). CARES is a car seat alternative for use on airplanes only, not in passenger vehicles.

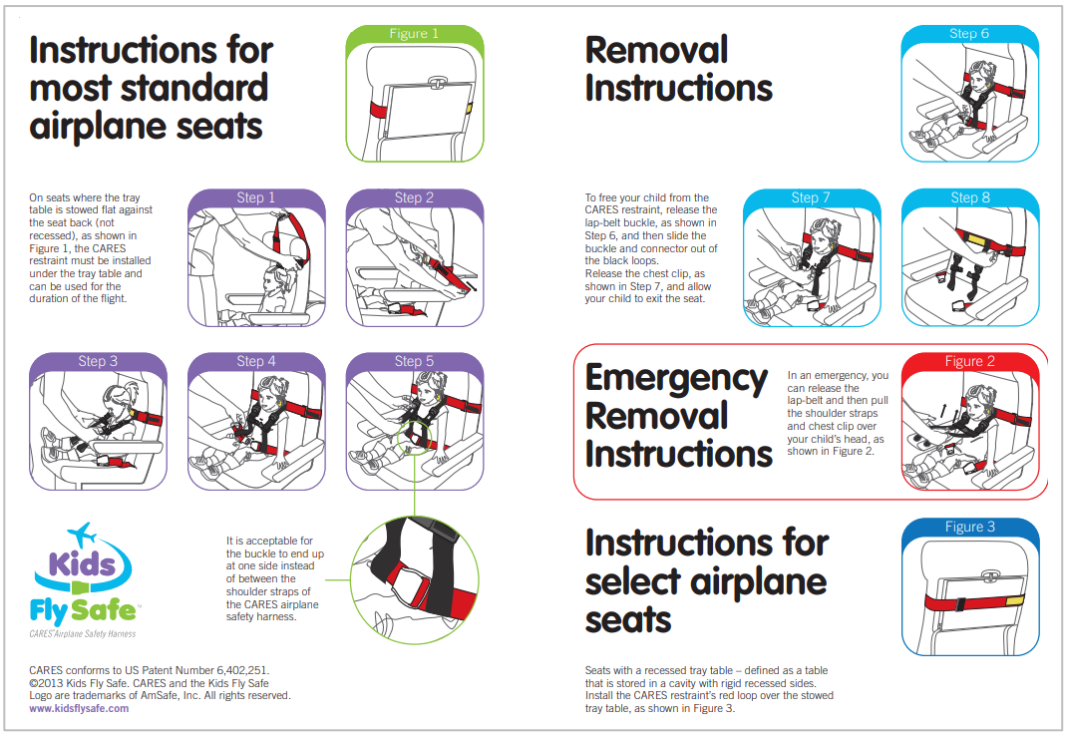
CARES is designed for children who are:

- Age one year and older
- Between 22 and 44 pounds (10 and 20 kg)
- Less than 40 inches (101 cm) tall

CARES is a lightweight restraint made of webbing. By using an airplane's lap belt and an additional belt wrapped horizontally around the seatback, this device provides upper body restraint over a child's shoulders.



A CARES adds upper body restraint to an airplane's lap belt.



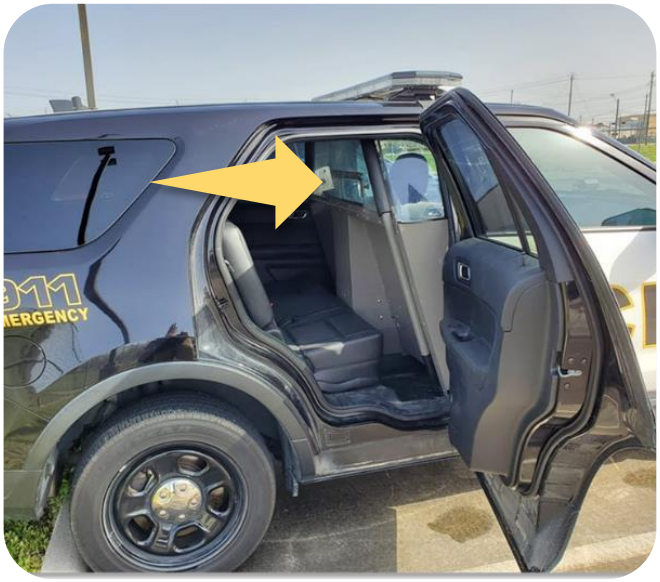
CARES instructions

Emergency Vehicles

LAW ENFORCEMENT VEHICLES

Correct car seat installation is typically not possible in law enforcement vehicles.

- A car seat or booster seat may never be installed in the rear seat of a law enforcement vehicle that has a prisoner screen.
  - The screen does not allow enough space for the safe forward movement of a child's head in a crash.



Prisoner screen does not allow children to ride safely.

- Plastic vehicle seats, commonly found in the rear seat of law enforcement vehicles, are not compatible with installation of car seats and booster seats.



Plastic vehicle seats are not car seat compatible.

In general, when children are involved in emergency situations, best practice is for them to be transported in another vehicle where they can be correctly secured.

AMBULANCES

As of 2024, there are no Federal standards in the United States or Canada for securing children in ambulances.

- The most comprehensive guidance is provided by the National Association of State EMS Officials (NASEMSO), *Safe Transport of Children by EMS: Interim Guidance*.[4]
- Another resource for pre-event planning is the *Working Group Best-Practice Recommendations for the Safe Transportation of Children in Emergency Ground Ambulances*.[5]



- Emergency transport agencies are encouraged to develop and follow guidelines specifically for child passengers.

TRANSPORTATION CONSIDERATIONS

- Some versions of captain's chairs made for the back area of ambulances have a built-in car seat that may be used by child passengers, if appropriate for their age, weight, height and injury status.

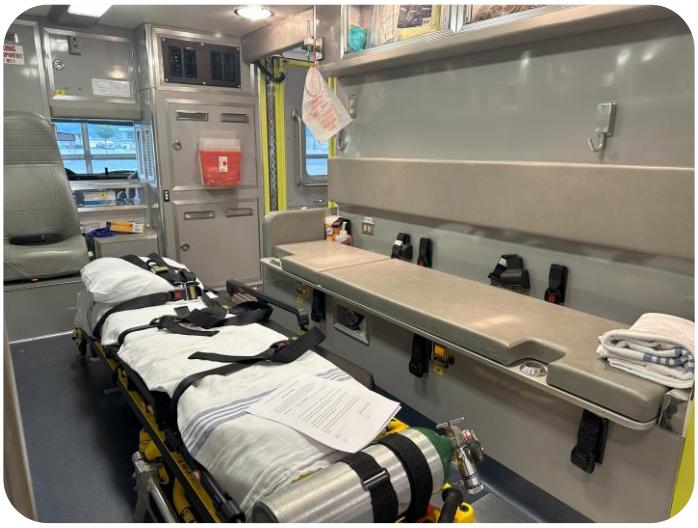


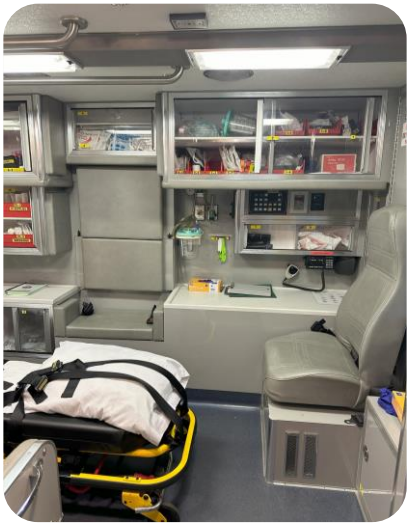
Captain's chair with built-in car seat

[4] https://nasemso.org/committees/safe-transport-of-children/

[5] https://static.nhtsa.gov/nhtsa/downloads/p2017-documents/811677.pdf

- Car seat and booster seat manufacturers do not allow installation on side-facing or rear-facing vehicle seats found in many emergency vehicles.





- All occupants and equipment should be secured. Unrestrained occupants and equipment may collide with other occupants possibly causing serious or fatal injuries in a crash.

Best practice is to transport non-patient children in another passenger vehicle in an appropriate car seat or booster seat when possible.





NATIONAL TRAINING

The *Improving Occupant Protection for Children in Ambulances* is designed to teach EMS personnel about the selection and installation of ambulance-specific restraints and some types of conventional child restraints on ambulance cots.



Visit preventinjury.medicine.iu.edu/adaptive-transportation/safe-travel-for-all-children/adaptive-trainings for more information.



Progress Check

1 What is compartmentalization on a school bus?

TG PAGE(S)

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

TG PAGE(S)

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

TG PAGE(S)



12

Using and Building Your New Skills

In this module, we will answer:



- How can you apply your new child passenger safety skills?
- What are the next steps to strengthen your new skills?
- What are the steps required for recertification?



WORD WATCH

The following terms and acronyms used in this module may be new to you. Look them up in your **Glossary of Terms** in the Appendix if needed.

- CEU
- checkup event
- Child Passenger Safety Technician Instructor (CPST-I)
- inspection station
- Technician Proxy

ABOUT THIS MODULE

You have learned about vehicle occupant protection systems, car seats and booster seats and how they work together to keep children safe. Additionally, you have learned how to explain best practice recommendations to caregivers. Now it is time to apply your new technical and communication skills.



ACTIVITY—LOOK HOW FAR YOU HAVE COME!

1. Take a moment to review the video you recorded of your first car seat installation during Module 3.
2. Reflect on your progress. What have you learned?

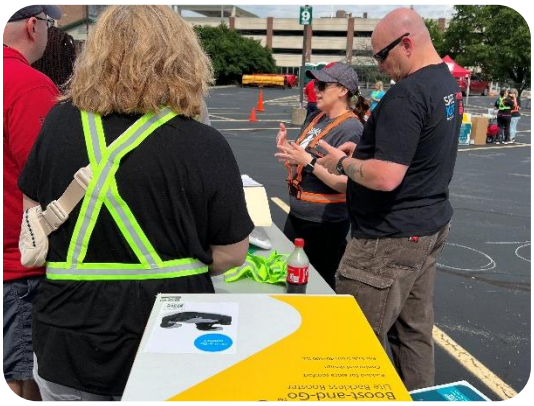


ACTIVITY—OBSERVE AND DOCUMENT A CAR SEAT CHECK

- As stressed throughout the course, documentation is an important part of car seat checks and is standard practice.
- You have practiced using the National Digital Car Seat Check Form (NDCF) in segments. Now it is time to put the entire process together.
- While watching the video, practice documenting the car seat check on a paper NDCF or in the NDCF Training app.

Next Steps

Getting involved in child passenger safety activities is an important step toward maintaining and strengthening your new technical and communication skills.





CREATE AN NDCF ACCOUNT

Standardized data collection among CPSTs is essential to improving safety for children in motor vehicles. Car seat check data can be used to educate caregivers, inform public safety communication campaigns and identify gaps in transportation safety for children.[1]

By using the NDCF for car seat checks, the data collected will automatically be included in individual, local, state, regional and national statistics on the NDCF dashboards.

Visit carseatcheckform.org to create an NDCF account.

NDCF Quick Start Guide

Visit cpsboard.org/curriculum-resources to download the NDCF Quick Start Guide.

[1] https://www.nsc.org/getmedia/3975bcad-43ff-4abb-9dd9-4c9e8f4d2672/ndcf-policy-brief.pdf

What You Will Need to Create Your Account

- Upload a copy of your CPST wallet card as proof of your current certification.
  - Your CPST wallet card will be available when you log into your profile at **cert.safekids.org** once the course is finalized.



Review NDCF resources and tutorial videos at cpsboard.org/NDCF.

Please contact your local training organization to inquire about their specific data collection program and check form options.

BE ACTIVE IN YOUR COMMUNITY

There are many ways to use your new skills by actively participating in your community.

- Connect with local, state/provincial/territorial and regional child passenger safety contacts to learn about activities and events in your area.
- Volunteer at in-person and virtual checkup events.
- Encourage others to learn more about child passenger safety.
  - Provide current, easy-to-read materials and information.
  - Give community presentations.
  - Participate in community events including health and safety fairs.
  - Provide informational trainings for staff within your organization.



Community event example

TECH TIP

Best practice is to review educational materials often to be sure you are providing the most up-to-date information.

BUILD SKILLS

The *Child Passenger Safety Technician Certification Training* is an introductory course. You are encouraged to continue to build both your technical and communication skills. Remember to work within the scope of your training and to follow the *CPST Code of Conduct*.

- Work with a mentor to improve your knowledge base and technical skills.
- Earn continuing education units (CEUs) to build your technical skills by attending workshops, viewing webinars, completing online courses and reading approved newsletters and journals.
- Continue to work on building positive communication skills by attending community education workshops, viewing webinars and completing online courses.
- Complete CPST enrichment trainings on specialized transportation topics.
- Familiarize yourself with child passenger safety resources, which are printed on the inside back cover of the Technician Guide.

TECH TIP

Free CEU and community education courses are available in the Child Passenger Safety Learning Portal at carseateducation.org and the Safe Kids Training Portal at training.safekids.org.



ORGANIZE A CHECKUP EVENT OR INSPECTION STATION

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

Checkup Event

- A checkup event is a standalone event held for a specific time, date and location where caregivers come to learn how to use their car seats and booster seats in their vehicles. This can be by appointment or on a first-come, first-served basis.





Photos from car seat checkup events

Inspection Station

- An inspection station is a dedicated location where caregivers come, usually by appointment during set dates, times and intervals, to learn how to use their car seats and booster seats in their vehicles.

Refer to the Planning Guide for Child Passenger Safety Checkup Events and Inspection Stations at cpsboard.org/curriculum-resources for more information.

Recertification Process

UNITED STATES



The certification cycle for CPSTs is two years.

- To retain your certification, you must complete the recertification requirements before your certification expires.
  - You may complete the recertification requirements at any time during the certification cycle.
  - You must enter all recertification information into your CPST profile at **cert.safekids.org**.

TECH TIP

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



Recertification Requirements



Complete five different types of seat checks, which must be observed and approved by a Child Passenger Safety Technician Instructor (CPST-I) or Technician Proxy.



Complete 6 continuing education units (CEUs).[2]



Complete at least one of the following community education requirements:

Participate in a 2-hour car seat checkup event.

OR

Provide at least 4 hours of community education to people who are not CPSTs.

OR

Attend a 1-hour educational session—online or in-person.



Pay the recertification fee.[3]

2 Proof of completion is required. Keep a copy of all documentation in case of an audit.

3 This may be done up to four months prior to the certification cycle end date once all requirements have been completed and entered into your CPST profile at https://cert.safekids.org.

Useful Tools for Recertification

Visit cert.safekids.org/resources-faqs/forms/recertification for helpful resources as you complete your recertification requirements.

Certification-Related Questions

Below are useful resources for certification-related questions.

- National Child Passenger Safety Certification program at **cert.safekids.org**
  - I'm a Tech section
  - Frequently Asked Questions (FAQs) section
  - Policies and Procedures Manual
- Safe Kids Child Passenger Safety Certification Customer Service
  - Call: **877-366-8154**
  - Email: **cpscert@safekids.org**

In Canada training, certification and recertification of CPSTs are the responsibility of each training organization. CPSTs are encouraged to contact their local training organization to understand their specific recertification process.



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

MODULE VIDEOS

- Car Seat Check Demonstration
- How to Log in to Your CPST Certification Profile



Appendix

Child Occupant Protection Glossary

#

3-in-1 Car Seat: *See All-in-One Car Seat*

4-in-1 Car Seat: *See All-in-One Car Seat*

5-in-1 Car Seat: *See All-in-One Car Seat*

5-point Harness: *See Harness, 5-point*

A

ACSD: *See Aviation Child Safety Device*

Adaptive Car Seat/Booster Seat: Car seat or booster seat that must be obtained through a specialized provider; typically used for children with health and/or behavioral needs

Adjustable Foot: *See Recline Adjustment*

Advanced Air Bag: *See Air Bag, Advanced*

After-Market Product: *See Non-Approved Product*

Air Bag: Vehicle occupant protection device made up of a fabric bag designed to rapidly 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

Air Bag, Advanced: Frontal air bag that uses a complex system of sensors and other technology to automatically adjust the timing and inflation in a crash; also referred to as smart air bag

Air Bag, Curtain: Side air bag that inflates from the roofline above the side windows to protect the occupant from striking the window or incoming vehicle or object; also referred to as IC-inflatable curtain and safety canopy

Air Bag, Front Center: Side air bag that inflates between the driver's seat and the center console to prevent front seat occupants from hitting each other in a crash

Air Bag, Frontal: Air bag at the front of a vehicle that absorbs crash energy to protect a front seat occupant; driver and front passenger air bags inflate from the steering wheel and dashboard, respectively; can be found in rear seats of some vehicles

Air Bag, Knee: 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 and/or glove box

Air Bag, Passenger: Frontal air bag for the front part of the passenger compartment; typically, it is larger than the driver air bag and may protect either the front center or outboard passengers or both

Air Bag, Seat Cushion: 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 located within the driver's and/or front passenger's seat

Air Bag, Seat-Mounted Side: Air bag that inflates from the side of an outboard vehicle seatback to fill the space between the passenger and the door/window; manufacturers may refer to as torso air bag or torso bag

Air Bag, Side: Air bag that is designed to fill the space between an occupant and the vehicle door and/or window; may inflate in frontal, side impact, and rollover crashes; also referred to as side impact air bag; vehicle manufacturers use many terms to refer to side air bags including SIPS–side impact protection system, SAB–side air bag and SABIC–side air bag inflatable curtain

Air Bag, Side Impact: *See Air Bag, Side*

Air Bag, Smart: *See Air Bag, Advanced*

Air Bag, Torso: *See Air Bag, Seat-Mounted Side*

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

ALR: *See Retractor, Automatic Locking*

Anchor, Seat Belt: One of the points where a seat belt attaches to the vehicle or vehicle seat

Angle: *See Recline Angle*

Angle Adjustment: *See Recline Adjustment*

Anti-Rebound Bar/Panel: Rigid bar or panel 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 frontal or rear-impact crash; also referred to as ARB

ARB: *See Anti-Rebound Bar*

Automatic Locking Retractor: *See Retractor, Automatic Locking*

Aviation Child Safety Device: Airplane-specific child restraint approved by the U.S. Federal Aviation and Transport Canada; also referred to as ACSD

B

Back Seat: *See Rear Seat*

Backless Booster Seat: Booster seat with no back structure so it relies on the vehicle's seat back and head restraint for the child's head, neck and back support; also referred to no-back booster seat; see also booster seat

Base: Bottom of a car seat; also is a common reference to the detachable base of an infant car seat

Belt Path: On a car seat, the area the manufacturer has designated for routing the seat belt or lower anchor attachment webbing for installation. On a booster seat, the area the manufacturer has designated for routing the seat belt over the booster seat and the child's body to restrain the child.

Belt-Positioning Booster: *See Booster Seat*

Belt Tensioning Device: *See Tension Device*

Belt Tensioning Plate: *See Tension Device*

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 the car seat manufacturer instructions

Booster Car Seat: *See Combination Car Seat*

Booster Seat: Backless or high-back seat that raises and positions a child so vehicle seat belt fits correctly over the stronger points of a child's body, the hips and across the chest; must be used with a lap-and-shoulder belt; also referred to as belt-positioning booster or BPB

BPB: *See Belt-Positioning Booster Seat*

Buckle: Hardware that accepts the latch plate and holds the seat belt or car seat harness in place

Buckle Slot: Narrow opening in a car seat where the buckle webbing is threaded through the car seat's shell

Buckle Strap: *See Buckle Webbing*

Buckle Tongue: *See Latch Plate*

Buckle Webbing: Webbing on a car seat with a buckle on one end that goes between the child's legs to accept the latch plate, often adjustable; also referred to as buckle strap or crotch strap

Built-In Car Seat/Booster Seat: Car seat or booster seat built into the vehicle seat; also referred to as integrated car seat/booster seat

C

Canadian Motor Vehicle Restraint Systems and Booster Seats Safety Regulations: Canadian Motor Vehicle Safety Standard that regulates child restraint systems designed for use in a motor vehicle or aircraft to restrain, seat or position children 80 pounds or less; also referred to as RSSR

Canadian Motor Vehicle Safety Standards: Regulations established by Transport Canada that define minimum safety performance requirements for motor vehicles or items of motor vehicle equipment in Canada; often referred to as CMVSS

Car Safety Seat: *See Car Seat*

Car Seat: General term for infant, convertible, forward-facing only and all-in-one car seats; also 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: Infant car seat that often connects to a manufacturer-provided detachable base

Carrier Release: Mechanism used to release a carrier from its detachable base on an infant car seat; typically located on either the carrier or the detachable base

Carry Handle: Part attached to an infant car seat used to carry the car seat; instructions for some models allow or require the handle to be used in a position during travel that functions as an anti-rebound bar

Carry Handle Adjustment Button: Mechanism used to unlock the carry handle of an infant car seat so it can be adjusted among various positions such as those for carry and travel

CEU: Continuing Education Unit; also referred to as continuing education

Checkup Event: Standalone event for a specific date, time and location where caregivers come to learn from Child Passenger Safety Technicians how to use their car seats and booster seats in their vehicles

Chest Clip: Part that holds the harness on car seats together over the child's chest at armpit level; also referred to as harness retainer clip or retainer clip.

Child Passenger Safety: Term used for the science and practice of protecting children being transported; also referred to as CPS

Child Passenger Safety Technician: Person who has successfully completed the standardized Child Passenger Safety Technician Certification Training course; also referred to as CPS Technician, CPST and Technician

Child Passenger Safety Technician Instructor: Person who has successfully completed the requirements to teach the Child Passenger Safety Technician Certification Training course; also referred to as CPS Instructor, CPST-I, CPSTI or Instructor

Child Restraint/Child Restraint System: Crash-tested device for an infant or child meets Federal standards for their protection in the event of a motor vehicle crash; general term for systems including car seats, booster seats, harnesses/vests or car beds; also referred to as CR or CRS; see also Car Seat

Child Restraint Anchorage System: *See LATCH System*

Child Safety Restraint System: Terminology used in the pupil transportation industry for child restraint systems; also referred to as CSRS

Child Safety Seat: *See Car Seat*

Child Seat: *See Car Seat*

CMVSS: *See Canadian Motor Vehicle Safety Standards*

CMVSS 210.1: Canadian Motor Vehicle Safety Standard that regulates the design and performance of tether anchorages in passenger vehicles

CMVSS 210.2: Canadian Motor Vehicle Safety Standard that regulates the design and performance of lower universal anchorages in passenger vehicles

Collision: *See Crash, Vehicle*

Combination Car Seat: Forward-facing car seat that can be used with the harness up to a certain child size and then, with removal or stowage of the harness, as a booster seat; also referred to as a booster car seat, harness booster seat or harness-to-booster car seat

Compartmentalization: Occupant protection approach on school buses that combines energy-absorbent seat backs and closely spaced rows to create a small area within which the occupants are confined in a frontal or rear-end crash

Compliance Testing: Testing performed randomly by NHTSA to inform of potential noncompliance of a specific vehicle or child restraint system (or other motor vehicle equipment) based on a failure to meet the minimum requirements of the applicable Federal Motor Vehicle Safety Standard (FMVSS); it is neither an approval nor certification that the vehicle or equipment complies with all applicable FMVSS requirements

Conventional Car Seat/Booster Seat: Car seat or booster seat that is readily available to caregivers from a local or online retailer

Convertible Car Seat: Car seat that can be used both rear-facing and forward-facing

CPS: *See Child Passenger Safety*

CPS Instructor: *See Child Passenger Safety Technician Instructor*

CPS Technician: *See Child Passenger Safety Technician*

CPST: *See Child Passenger Safety Technician*

CPST-I: *See Child Passenger Safety Technician Instructor*

CPSTI: *See Child Passenger Safety Technician Instructor*

CR/CRS: *See Child Restraint/Child Restraint System*

Crash, Frontal: Crash in which the impact occurs at the front end of the vehicle; the most frequent type of crash resulting in fatalities

Crash, Human: Second stage of a crash when the occupants collide with parts of the vehicle interior, air bag and/or restraint webbing, if restrained

Crash, Internal: Third stage of a crash; occurs after an occupant's body comes to a stop and their internal organs continue to move toward the point of impact

Crash, Lateral: *See Crash, Side Impact*

Crash, Rear-End: Crash in which the impact occurs at the rear end of the vehicle

Crash, Rollover: Crash where the vehicle rolls over onto its side or upside down one or more times

Crash, Rotational: Crash where the vehicle spins

Crash, Side Impact: Crash into the side of a vehicle; the most severe/deadly type of crash; also referred to as lateral crash

Crash, Vault: Type of crash where the vehicle flips end over end

Crash, Vehicle: First stage of a crash when the vehicle strikes another vehicle or object; also referred to as collision and motor vehicle crash

Crash-Locking Latch Plate: *See Latch Plate, Dynamic*

Crotch Strap: *See Buckle Webbing*

Crumple Zone: Vehicle occupant protection feature that absorbs crash forces in order to extend the time it takes for the vehicle to come to a stop during a vehicle crash

CSRS: *See Child Safety Restraint System*

Curtain Air Bag: *See Air Bag, Curtain*

D

Dashboard: Panel extending across the interior of a vehicle below the windshield and usually containing instruments, controls and screens; also referred to as instrument panel

Design Standard: Industry standard that recommends how the product should look, promoting uniformity among manufacturers

Detachable Base: Separate part that allows a carrier to be snapped in and out without requiring reinstallation; found on infant car seats; also referred to as base

Developmental Level: Needs, behaviors and capabilities that are common and different for that stage of development

Direct Routing Tether System: Tether system where a car seat's tether routes directly to a tether anchor without first going through a tether router

Dynamic Latch Plate: *See Latch Plate, Dynamic*

E

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: *See Retractor, Emergency Locking*

Emergency Locking Retractor: *See Retractor, Emergency Locking*

EU Routing: *See European Belt Routing*

European Belt Routing: Type of infant car seat installation where the shoulder belt routes behind the car seat shell providing a stable installation without a base; also referred to as EU routing

Expiration Date: Point at which the manufacturer states a car seat, booster seat or other child restraint should no longer be used; length of allowed use varies by manufacturer, is optional and is usually expressed as a period of years from the date of manufacture; communicated by stamps in the plastic, on labels, in the instruction manual and/or on the manufacturers' websites

F

FAA: Federal Aviation Administration

Federal Motor Vehicle Safety Standards: Regulations established by NHTSA that define minimum safety performance requirements for motor vehicles or items of motor vehicle equipment in the United States; often referred to as FMVSS

Fitting Station: *See Inspection Station*

Flexible Lower Anchor Attachment System: *See Lower Anchor Attachment System, Flexible*

FMVSS: *See Federal Motor Vehicle Safety Standards*

FMVSS 213: Federal Motor Vehicle Safety Standard that regulates child restraint systems designed for use in a motor vehicle or aircraft to restrain, seat or position children 80 pounds or less

FMVSS 225: Federal Motor Vehicle Safety Standard that regulates the design and performance of the child restraint anchorage system, commonly known as LATCH, in passenger vehicles

Foot Prop: *See Load Leg*

Forward-Facing: Facing the front of the vehicle

Forward-Facing Only Car Seat: Car seat designed for use by an older child in forward-facing mode only; cannot be used as a rear-facing car seat or booster seat

Frame: *See Shell*

Front Center Air Bag: *See Air Bag, Front Center*

Frontal Air Bag: *See Air Bag, Frontal*

Frontal Crash: *See Crash, Frontal*

G

Glove Box: Compartment built into the dashboard of a vehicle in front of the outboard passenger; used for miscellaneous storage and, often, the vehicle owner's manual; also referred to as glove compartment

Glove Compartment: *See Glove Box*

Good, Better, Best: Philosophy that Child Passenger Safety Technicians use to understand protection options and respect caregiver choices

Gross Vehicle Weight Rating: Maximum weight a vehicle is designed to carry including the net weight of the vehicle with accessories plus the weight of passengers, fuel and cargo; also referred to as GVWR

GVWR: *See Gross Vehicle Weight Rating*

H

Harness: Combination pelvic and upper torso child restraint system that consists primarily of flexible material, such as straps, webbing or similar material and that does not include a rigid seating structure for the child; uses a lap belt and tether to secure the occupant; harnesses are not required to have lower anchor attachments but may have them; typically used in place of a car seat or booster seat; also referred to as vest

Harness, 5-point: Webbing that keeps a child in the car seat and spreads crash forces across five points of contact (one over each shoulder, one on each side of the pelvis, and one between the legs) with the webbing joining at a buckle near the child's lap

Harness Adjuster: Mechanism that releases and tightens the harness in a car seat; may be a button, a toggle or other style; also referred to as harness release

Harness Adjuster Strap: Strap that is pulled to tighten the harness on a car seat

Harness Booster Car Seat: *See Combination Car Seat*

Harness Release: *See Harness Adjuster*

Harness Retainer Clip: *See Chest Clip*

Harness Slots: Narrow openings in a car seat where the harness is threaded through the car seat's shell

Harness-to-Booster Car Seat: *See Combination Car Seat*

Head Rest: *See Head Restraint*

Head Restraint: Car seat or vehicle seat part that is behind and sometimes alongside the head, specifically for enhanced protection of an occupant's head and neck in a crash; may be adjustable or fixed; also referred to as head rest

Height Adjuster: Mechanism that moves the head restraint on a car seat or booster seat to predetermined positions, sometimes adjusting the harness height or shoulder belt guide depending on the car seat or booster seat

High-Back Booster Seat: Booster seat with a backrest that provides head, neck and back support for the child; see also booster seat

Human Crash: *See Crash, Human*

I

IC: *See Inflatable Curtain*

Inboard: Situated near the center of the vehicle

Incompatibility: When a particular car seat will not work or fit in a specific vehicle seating position

Indirect Routing Tether System: Tether system where the tether first goes through a router that is behind the vehicle seat and then attaches to a tether anchor that is located elsewhere, often behind an adjacent vehicle seat; a design common in pickup trucks

Infant Car Seat: Car seat designed for use by a young child in a semi-reclined rear-facing position only; typically, is a carrier with a manufacturer provided detachable base; not permitted by manufacturer to be used forward-facing; also referred to as a rear-facing only car seat

Infant Loops: Sewn slots in the harness webbing of some car seats that are manufacturer-designated attachment points for the splitter plate; used, following manufacturer's instructions, to remove a segment of webbing from the harness system so it is possible to get a snug fit on the smallest of allowed passengers

Inflatable Curtain: *See Air Bag, Curtain*

Inflatable Seat Belt: *See Seat Belt, Inflatable*

Inlay: *See Insert*

Insert: Additional component provided by the manufacturer to aid with child positioning, fit and/or comfort; also referred to as inlay and pad

Inspection Station: Dedicated location where caregivers come, usually by appointment, to learn from Child Passenger Safety Technicians how to use their car seats and booster seats in their vehicles; held at set dates, times and intervals; also referred to as fitting station

Instructor: *See Child Passenger Safety Technician Instructor*

Instrument Panel: *See Dashboard*

Integrated Car Seat/Booster Seat: *See Built-In Car Seat/Booster Seat*

Internal Crash: *See Crash, Internal*

ISOFIX: International Standards Organization's term for the standardized child restraint installation system; while the name LATCH is commonly used in the United States to refer to the child restraint anchorage system, and UAS was adopted in Canada, ISOFIX is the term used elsewhere worldwide; vehicles made by companies based outside North America (especially Europe) often identify LATCH/UAS as ISOFIX in instructions and labeling

J

K

Knee Air Bag: *See Air Bag, Knee*

L

Label: Sticker or other panel permanently affixed to a car seat or booster seat that provides use information and important warnings, as required by Federal regulations

Lap Belt: Vehicle seat belt that is anchored at two points for use, restraining a vehicle occupant at the thighs/hips; does not provide upper body protection

Lap-and-Shoulder Belt: Vehicle seat belt that is anchored at three points, restraining the vehicle occupant at the thighs/hips and across the chest and shoulder; provides upper body protection

LATCH: Lower Anchors and Tethers for CHildren; name commonly used in the United States to refer to the child restraint anchorage system which is the required vehicle attachment system dedicated to car seats comprised of two lower anchors and a tether anchor

Latch Plate: Hardware that is pressed firmly into a buckle to connect the segments of a safety device, like a seat belt or car seat harness; also referred to as buckle tongue, tongue and tongue plate

Latch Plate, Crash-Locking: *See Latch Plate, Dynamic*

Latch Plate, Dynamic: Non-locking latch plate that has a bar that rotates to pinch the lap belt and shoulder belt together at the moment of a crash to prevent webbing slack from moving from the lap belt to the shoulder belt; does not lock to hold a car seat tight under non-crash conditions; also referred to as crash-locking latch plate

Latch Plate, Locking: Latch plate that holds the lap belt at a fixed length, after it has been adjusted

Latch Plate, Non-Locking: 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

Latch Plate, Sewn-On: Non-locking latch plate; webbing runs through a slot(s) in the latch plate and then sewn together

Latch Plate, Sliding: Non-locking latch plate; the seat belt webbing moves freely through a slot in the latch plate and does not lock at a fixed length

LATCH System: Full set of required LATCH features on either a vehicle (lower anchors and a tether anchor) or a car seat (lower anchor attachment system and tether); also referred to as child restraint anchorage system

Lateral Crash: *See Crash, Side Impact*

Learn, Practice, Educate: Guiding philosophy behind the *Child Passenger Safety Technician Certification Training* curriculum which promotes learning the facts/skills/information, practicing the facts/skills/information and educating caregivers on what you have learned; also referred to as LPE

Level Indicator: *See Recline Indicator*

Load Leg: Support mechanism that extends from a car seat to the vehicle floor; prevents or reduces excessive forward and downward rotation of the car seat in a crash; also referred to as foot prop, stability leg or support leg

Lock-Off: Feature built into a car seat or detachable base that holds a lap-and-shoulder belt at a fixed length when used during installation

Lockability Requirement: Requirement since model year 1996 (U.S.) for passenger seat belts to have a method to remain at a fixed length when used for car seat installation; Canada introduced the lockability requirement beginning in model year 2015

Locking Clip: Metal piece that can be threaded onto lap-and-shoulder belt webbing to hold the lap belt at a fixed length for a car seat installation; used in place of a locking latch plate or locking retractor

Locking Latch Plate: *See Latch Plate, Locking*

Locking Retractor: *See Retractor, Locking*

Lower Anchor Adjuster: Hardware on a car seat or booster seat's flexible lower anchor attachment system that is used to lock and shorten/lengthen the system's webbing

Lower Anchor Attachment System: Permanent set of parts on a car seat or booster seat that are used to install it to a vehicle's lower anchors

Lower Anchor Attachment System, Flexible: Permanent set of parts on a car seat or booster seat that are used to install it to a vehicle's lower anchors; a flexible system is made of lower anchor connectors and a lower anchor adjuster(s) on webbing

Lower Anchor Attachment System, Rigid: Permanent set of parts on a car seat or booster seat that are used to install it to a vehicle's lower anchors; a rigid system has non-adjustable lower anchor connectors that attach directly to the car seat or booster seat without the use of webbing

Lower Anchor Connector: Hardware on a car seat or booster seat's lower anchor attachment system used to connect onto a vehicle's lower anchor

Lower Anchor Webbing: Webbing of a car seat or booster seat's flexible lower anchor attachment system

Lower Anchors: Standardized pair of metal bars located near the vehicle seat bight that provides a location to attach the lower anchor connectors of a car seat or booster; usually part of a complete vehicle LATCH system

LPE: *See Learn, Practice, Educate*

M

Misuse: Using a car seat or booster seat against manufacturer's instructions

Motor Vehicle Crash: *See Crash, Vehicle*

N

National Child Passenger Safety Board: Group that maintains the quality and integrity of the standardized 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 Digital Car Seat Check Form: Free electronic form that Child Passenger Safety Technicians are encouraged to use when documenting car seat checks in order to collect data needed by individuals, agencies, states, manufacturers and NHTSA; also referred to as NDCF (**carseatcheckform.org** and **cpsboard.org/ndcf**)

National Highway Traffic Safety Administration: Federal agency that is part of the Department of Transportation which promotes highway and transportation safety; established and enforces the FMVSSs; 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**)

National Safety Mark: Prescribed expression, symbol or abbreviation or any combination of them used to show that a vehicle or a car seat meets the necessary standards in Canada; also referred to as NSM

NCPSB: *See National Child Passenger Safety Board*

NDCF: *See National Digital Car Seat Check Form*

NHTSA: *See National Highway Traffic Safety Administration*

No-Back Booster Seat: *See Backless Booster Seat*

Non-Approved Product: Product, typically made and marketed by a third party, that is not subject to FMVSS 213 or FMVSS 225 and is not approved for use with 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: *See Latch Plate, Non-Locking*

Non-Locking Retractor: *See Retractor, Non-Locking*

Non-Regulated Product: *See Non-Approved Product*

NSM: *See National Safety Mark*

O

Occupant Protection: Safety features, like car seats, booster seats, seat belts and air bags designed to protect occupants of motor vehicles in the event of a crash

Outboard: Situated near the outside of the vehicle next to the window

P

Pad: *See Insert*

Padding: *See Seat Padding*

Passenger Air Bag: *See Air Bag, Passenger*

Passenger Vehicle: Motor vehicles with gross vehicle weight ratings of 10,000 pounds (4,536 kg) or less and include passenger cars and light trucks—SUVs, pickups and vans

Passive Safety Feature: Feature that protects the passenger without requiring any action by the passenger to make it work; for example, air bags

Performance Standard: Regulation that mandates how a product should perform under certain conditions or circumstances but does not mandate how a product should be designed or look

Pinch Test: Preferred method to determine tightness of a harness relative to the child's body; you should not be able to vertically pinch excess webbing at the shoulder once the harness is tightened

Q

R

Rear-End Crash: *See Crash, Rear-End*

Rear-Facing: Facing the rear of the vehicle

Rear-Facing Only Car Seat: *See Infant Car Seat*

Rear Seat: Designated vehicle seating position that is not in the front row; also referred to as back seat

Recall: Voluntary or required action taken by a car seat and vehicle manufacturer to correct a problem, noncompliance or deficiency discovered after products have been distributed or sold

Recline Adjuster: Mechanism that moves the recline adjustment

Recline Adjustment: Part of some car seats that moves to change the recline angle; also referred to as adjustable foot and angle adjustment

Recline Angle: Position of a car seat with respect to how a seated child's back will rest relative to being fully upright; also referred to as angle

Recline Indicator: Mechanism that identifies a car seat's correct angle for use per manufacturer's instructions; also referred to as level indicator

Registration Card: Federally required, postage-paid return card that comes with every new car seat and booster seat; should be filled out and returned to the manufacturer so caregivers will be notified of safety issues, including recalls

Restraint System: Crash-tested device or system—such as a car seat, booster seat or seat belt—that is specifically designed to provide protection for an occupant in the event of a crash

Retainer Clip: *See Chest Clip*

Retractor: Mechanism that gathers and stores unused seat belt webbing and locks the seat belt at a fixed length in a crash

Retractor, Automatic Locking: Retractor on a seat belt that, when locked, maintains a fixed length of seat belt webbing; often referred to as ALR

Retractor, Emergency Locking: Retractor that does not have a locking feature to hold the webbing at a fixed length; also referred to as ELR

Retractor, Locking: Retractor on a seat belt that, when locked, maintains a fixed length of seat belt webbing; also referred to as switchable retractor

Retractor, Non-Locking: Retractor that does not have a locking feature to hold the webbing at a fixed length; also referred to as ELR or emergency locking retractor

Retractor, Switchable: *See Retractor, Locking*

Retrofit: Installing, fitting or adapting a device or system in any way not provided on a product in its original condition; some types of retrofitting are acceptable if manufacturer's instructions are followed such as adding seat belts to a school bus or adding a tether anchor to an older passenger vehicle

Ride Down: Time it takes for an occupant or vehicle to come to a stop in a vehicle crash; a main objective of occupant protection is to extend the stopping time to reduce the crash forces on the body during a vehicle crash and take advantage of the vehicle safety features

Rigid Lower Anchor Attachment System: *See Lower Anchor Attachment System, Rigid*

Rollover Crash: *See Crash, Rollover*

Rotational Crash: *See Crash, Rotational*

Router: Mechanism that guides a car seat's tether in an indirect routing tether system; may be a closed loop or open system; typically found in pickup trucks

RSSR: *See Canadian Motor Vehicle Restraint Systems and Booster Seats Safety Regulations*

S

SAB: *See Side Air Bag*

SABIC: *See Side Air Bag Inflatable Curtain*

Safe Kids Worldwide: Certifying body responsible for administering all aspects of the National Child Passenger Safety Certification Program; also referred to as SKW (**cert.safekids.org** and **safekids.org**)

Safety Belt: *See Seat Belt*

Safety Canopy: *See Air Bag, Curtain*

Seat Belt: Buckle, retractor, anchor, webbing and latch plate system that restrains the occupant in the vehicle; also referred to as a safety belt or seat belt system

Seat Belt, Inflatable: Seat belt with an air bag in the shoulder belt

Seat Belt Positioner: Non-approved product that is marketed as a way to alter the position of a seat belt on a child

Seat Belt Syndrome: Group of injuries associated with seat belt misuse including severe abdominal injuries and/or fractures of the lower spine

Seat Belt System: *See Seat Belt*

Seat Bight: Area where the vehicle seat cushion meets the vehicle seat back; also referred to as the vehicle seat bight, seat crack or seat crease

Seat Crack: *See Seat Bight*

Seat Crease: *See Seat Bight*

Seat Cushion Air Bag: *See Air Bag, Seat Cushion*

Seat-Mounted Side Air Bag: *See Air Bag, Seat-Mounted Side*

Seat Padding: Fabric that covers the shell/frame and foam, if present, of vehicle seats, car seats and booster seats; also referred to as padding

Sewn-On Latch Plate: *See Latch Plate, Sewn-On*

Shell: Molded plastic and/or metal structure of the car seat or booster seat; also referred to as frame

Shoulder Belt Guide: Mechanism on a booster seat that is used to place the shoulder belt correctly across an occupant's shoulder so it does not slide off or cross the neck; may be adjustable

Shoulder Belt Height Adjuster: Mechanism in a vehicle that is used to place the shoulder belt correctly across an occupant's shoulder so it does not slide off or cross the neck; may be adjustable

Side Air Bag: *See Air Bag, Side*

Side Air Bag Inflatable Curtain: *See Air Bag, Side*

Side Impact Air Bag: *See Air Bag, Side*

Side Impact Crash: *See Crash, Side Impact*

Side Impact Protection System: *See Air Bag, Side*

SIPS: *See Side Impact Protection System*

SIR: *See Supplemental Inflatable Restraint*

SKW: *See Safe Kids Worldwide*

Sliding Latch Plate: *See Latch Plate, Sliding*

Smart Air Bag: *See Air Bag, Advanced*

Snug Harness: Harness that does not allow slack; the webbing lies in a relatively straight line without sagging yet does not press into the child's shoulders enough to create an indentation

Splitter Plate: Metal component that connects the two ends of the shoulder harness to the harness adjuster on the back of a car seat; also referred to as a yoke

SRS: *See Supplemental Restraint System*

Stability Leg: *See Load Leg*

Supplemental Inflatable Restraint: *See Air Bag*

Supplemental Restraint System: *See Air Bag*

Support Leg: *See Load Leg*

Switchable Retractor: *See Retractor, Locking*

T

TC: *See Transport Canada*

Technician: *See Child Passenger Safety Technician*

Technician Proxy: Person who has successfully completed the standardized Child Passenger Safety Technician Certification Training course and who has been approved to provide seat check sign-offs for recertification

Tension Device: Feature of some car seats that aids installation by removing slack in the seat belt or lower anchor webbing; also referred to as belt tensioning device or belt tensioning plate

Tether: Adjustable webbing with a hook that is attached at one or two places to the top of car seats; commonly used in a forward-facing installation but can be recommended in some rear-facing installations; when attached to a tether anchor in the vehicle limits a child's forward motion in a crash; also referred to as a top strap or top tether

Tether Adjuster: Hardware on a tether that is used to lock and shorten/lengthen the webbing

Tether Anchor: Part in a vehicle that provides a location to attach a car seat's tether; often part of the complete vehicle LATCH system

Tether Hook: Hardware on tether webbing used to attach a car seat's tether to a vehicle's tether anchor

Tongue: *See Latch Plate*

Tongue Plate: *See Latch Plate*

Top Strap: *See Tether*

Top Tether: *See Tether*

Torso Air Bag: *See Air Bag, Seat-Mounted Side*

Torso Bag: *See Air Bag, Seat-Mounted Side*

Transport Canada: Transport Canada is a Canadian Federal institution that is responsible for transportation policies and programs that promote safe, secure, efficient and environmentally responsible transportation; within its portfolio under the Motor Vehicle Safety Act, Transport Canada develops and maintains regulations for child restraint systems in Canada; also referred to as TC

U

UAS: Universal Anchorage System; name given in Canada to the vehicle attachment system dedicated to car seats; comprised of lower anchors in the vehicle and the lower anchor attachment system on the child restraint system used to attach it to the vehicle

V

Vault Crash: *See Crash, Vault*

Vehicle Crash: *See Crash, Vehicle*

Vehicle Seat Bight: *See Seat Bight*

Vest: *See Harness*

W

Webbing: Woven fabric used for the vehicle seat belt or car seat harness, adjuster, lower anchor connectors and/or tether

X

Y

Yoke: *See Splitter Plate*

Z

Install a Locking Clip



STEP 1: Route the seat belt through the correct belt path on the car seat and buckle the seat belt. The seat belt webbing should be flat, not twisted.



STEP 2: Place your hand in the car seat and press the car seat firmly into the vehicle seat cushion while tightening the lap belt near the buckle.



STEP 3: Pinch and hold the lap and shoulder belts together near the latch plate.



STEP 4: Unbuckle the seat belt while continuing to pinch the lap and shoulder belts together.



STEP 5: Thread the webbing of both the lap belt and shoulder belt through both sets of prongs on the locking clip.

- Refer to the car seat instruction manual for specific instructions on how to use a locking clip.
- Typically, a locking clip must be placed no more than 1 inch (2.5 cm) from the latch plate. Once the locking clip is threaded on the seat belt, the seat belt will remain at a fixed length.



STEP 6: Re-route the locked seat belt webbing through the car seat belt path. Press the car seat firmly into the vehicle seat cushion and buckle the seat belt.



STEP 7: Make sure the car seat moves less than 1 inch (2.5 cm) side-to-side or front-to-back when pulling or pushing at the belt path using moderate force. If the car seat moves more than 1 inch (2.5 cm) in any direction, uninstall the car seat and repeat the process of installing a locking clip.



STEP 8: To remove the locking clip, unbuckle the seat belt and pinch the seat belt webbing in half.

Answer Key • Spot Misuse

MODULE 6 • LOWER ANCHORS AND TETHERS



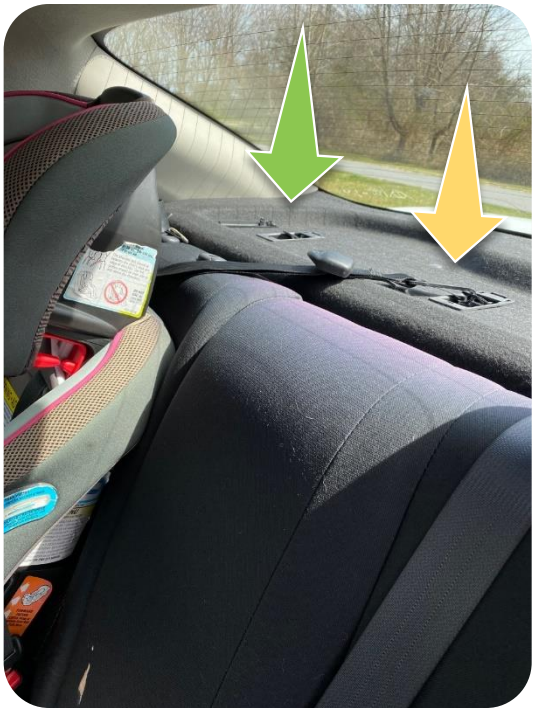
The lower anchor connector is attached upside down.



The tether is routed incorrectly around the sides of the vehicle seat, and the tether is twisted.



Two lower anchor connectors are attached to one lower anchor.



The tether is connected to the wrong tether anchor. The correct tether anchor is just behind the seating position in this vehicle.



The tether is attached to a cargo hook that is not a tether anchor.



The tether is not secured and is dangling from the car seat.

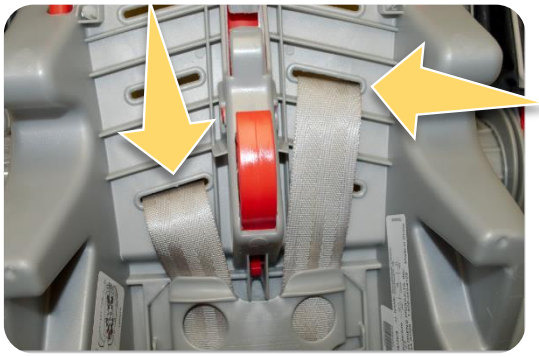
MODULE 8 • REAR-FACING CAR SEATS



This child appears to be too young to be riding in a forward-facing car seat.



Non-approved products are attached to the harness.



The shoulder harness webbing is routed through mismatched harness slots.



A rear-facing car seat is installed in front passenger seat of a vehicle with an active frontal air bag.



The recline indicator is not in the correct range for rear-facing use.



The harness webbing is twisted and is too loose.

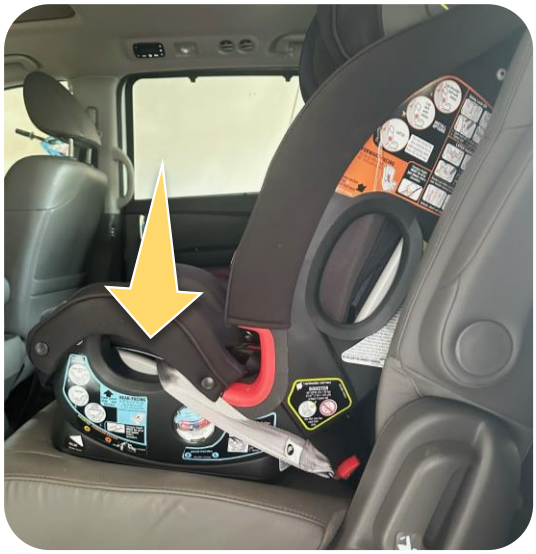


The child is wearing a bulky coat underneath the harness.

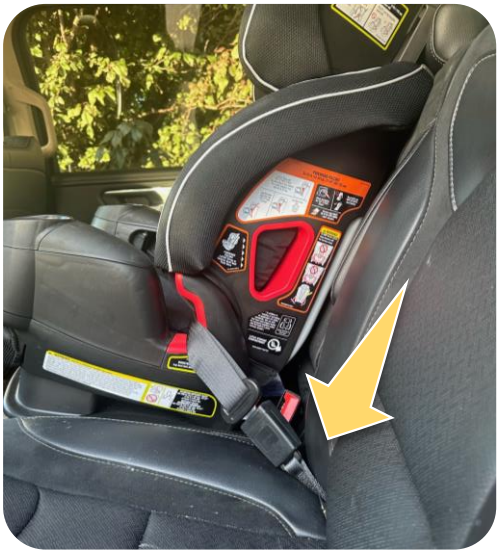


This car seat is expired.

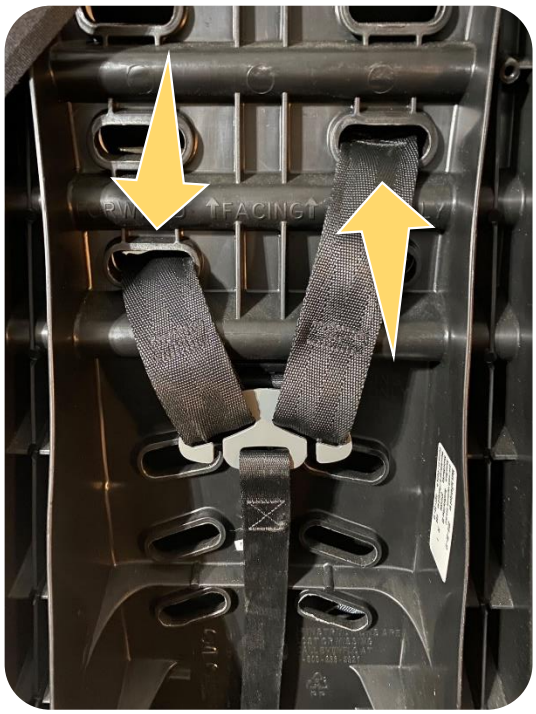
MODULE 9 • FORWARD-FACING CAR SEATS



The lower anchor attachment system is routed through the incorrect belt path (rear-facing belt path) for this forward-facing car seat installation.



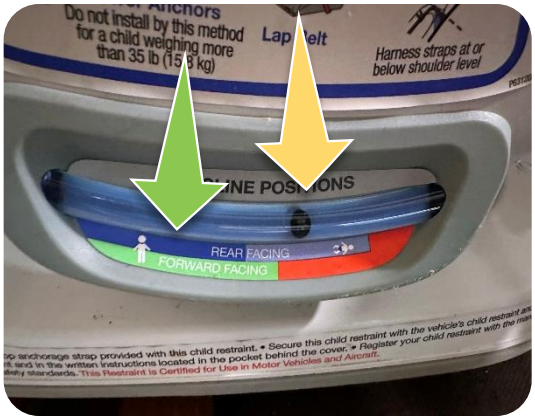
The seat belt is routed through the incorrect belt path (booster seat belt path) for this forward-facing car seat installation. The buckle from the incorrect seating position is being used.



The shoulder harness webbing is routed through mismatched harness slots.



The tether is connected to the incorrect tether anchor. The correct tether anchor is just behind the seating position in this vehicle.



This recline indicator is not in the forward-facing range of use.



This harness webbing is too loose. It can be pinched between the fingers.



The harness is below the child's shoulders on a forward-facing car seat. The harness should be at or above the shoulders.



The chest clip is too low. It should be at armpit level. The harness is too high. It should be at or just above the shoulders. The harness is too loose. It should be snug against the child's body.

MODULE 10 • BOOSTER SEATS AND SEAT BELTS



The lap belt is too high and is touching this child's stomach.



This child is too big for a booster seat. The tops of their ears are above the top of the vehicle head restraint.



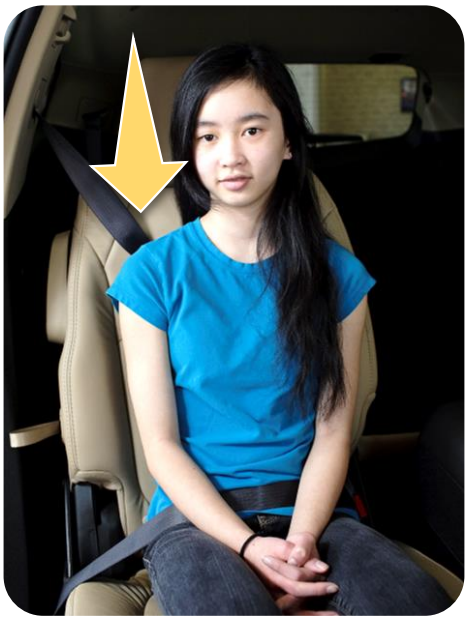
The shoulder belt is not routed correctly through the shoulder belt guide.



This child appears to be too young for a booster seat.



Seat belts must never be shared.



The shoulder belt is not correctly used. It is behind the child.



The child is not sitting upright on the vehicle seat.
The lap-and-shoulder belt is not correctly used.



This child is not wearing a seat belt.

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CPST Resources

UNITED STATES

- National Highway Traffic Safety Administration (**nhtsa.gov**)
- National Child Passenger Safety Board (**cpsboard.org**)
- Safe Kids Worldwide (**safekids.org** and **cert.safekids.org**)
- National Digital Car Seat Check Form Dashboard and Table Tool (**carseatcheckform.org**)
- Traffic Safety Marketing (**trafficsafetymarketing.gov**)
- American Academy of Pediatrics (**aap.org** and **healthychildren.org**)
- Centers for Disease Control and Prevention (**cdc.gov/injury** and **cdc.gov/transportationsafety**)
- Governors Highway Safety Association (**ghsa.org**)
- Insurance Institute for Highway Safety (**iihs.org**)
- Juvenile Products Manufacturers Association (**jpma.org**)
- Manufacturers Alliance for Child Passenger Safety (**saferidenews.com/macps**)
- National Association of County & City Health Officials (**naccho.org/membership/lhd-directory**)
- National Center for Statistics and Analysis (**cdan.dot.gov**)
- National Safety Council Injury Facts (**injuryfacts.nsc.org**)

CPST Certification/ Recertification Training

- CPST Certification Training Resources (**cpsboard.org/curriculum-resources**)
- CPST Certification Training Videos (**youtube.com/cpsboard**)
- Child Passenger Safety Learning Portal (**carseateducation.org**)
- Safe Kids Training Portal (**training.safekids.org**)

CANADA

- Health Canada (**canada.ca/en/health-canada**)
- Transport Canada's Child Car Seat Safety (**tc.canada.ca/en/road-transportation/child-car-seat-safety**)

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