Real World:
LATCH, Tethers and the CPS Technician

October 2012
Objectives

1. Recognize basic LATCH requirements
2. Recognize exemptions to requirement of LATCH
3. Identify Lower Anchors (LA) and Tether anchorage issues
4. Identify LATCH-related CPS Technician role and resources
Important Notice

• Sponsoring organizations do not endorse or support products included in any modules.
• Products included in this or any other module are used only as examples.
• Examples do not represent all products on the market.
• Check manufacturer websites for more products, explanations, and details.
LATCH: A Quick Review
What is LATCH?

L - Lower Anchors and
A - Tethers for
T - Children

Vehicle and Child Restraints
1. Refers to the child restraint anchorage system specified in FMVSS 225 (child restraint anchorage systems)
2. Corresponding top tethers and lower attachments identified in FMVSS 213 (child restraint LATCH attachments).
LATCH Overview
The Beginning…

• **Concept:** A standardized method of attaching a CR to a vehicle without using a seat belt making the installation of a CR for a family simpler.

• **Brief History:**
  • Phased in between 1999 and 2002
  • Fully implemented
    • Child restraints: September 1, 2002
    • Vehicles: Model Year 2003
LATCH: A Quick Review

Types of lower attachments

Rigid

Flexible

Illustrations courtesy of the Children’s Hospital of Philadelphia (CHOP)
LATCH: A Quick Review

Possible tether anchor locations

Illustrations courtesy of the Children’s Hospital of Philadelphia (CHOP)

Source: 2011 LATCH Manual
Image courtesy of Safe Ride News
LATCH: A Quick Review

The Children’s Hospital of Philadelphia (CHOP) has produced a 5 minute video about “Using LATCH to Install Car Seats and Booster Seats.” Click on the link below to view the video.

Click to play video: http://www.youtube.com/watch?v=_QA1e6mO04g
Test Your Knowledge

Vehicle basic LATCH requirements of FMVSS 225 include all except:

a. Top tether for three rear seating positions
b. Lower anchors in two seating positions
c. Applies to all vehicles and buses under 10,000 lbs.

Answer:

Vehicle basic LATCH requirements of FMVSS 225 include all except:

a. Top tether for three rear seating positions
b. Lower anchors in two seating positions
c. Applies to all vehicles and buses under 10,000 lbs.

FMVSS 225 applies to passenger cars, trucks, and multipurpose passenger vehicles with a gross vehicle weight rating (GVWR) of 8,500 pounds or less and buses (including school buses) with a GVWR of 10,000 pounds or less.

Test Your Knowledge

The exemptions to the vehicle LATCH requirements include all except:

A. Convertible cars, school buses or vehicles over a specified Gross Vehicle Weight

B. One built-in CR can replace the anchorage system in one rear seating position

C. At least one front seating position must have lower anchors if the vehicle has a manual air bag on/off switch

D. If RF CR has a detachable base, both the base and carrier must have lower attachments

Answer:

The exemptions to the vehicle LATCH requirements include all except:

A. Convertible cars, school buses or vehicles over a specified Gross Vehicle Weight

B. One built-in CR can replace the anchorage system in one rear seating position

C. At least one front seating position must have lower anchors if the vehicle has a manual air bag on/off switch

D. If RF CR has a detachable base, both the base and carrier must have lower attachments (this is related to the CR requirements – not vehicle – and also is a false statement.)

Lower Anchor Use With Non-standard Spaced Bars

- **Use of center position with outboard LATCH anchors** (if CR instructions allow)
  - **Most** vehicle manufacturers *do not* permit use in center rear unless it is designated as a LATCH position
    - Missing information does not mean it is allowed.
  - **Most CR instructions limit use to designated/approved vehicle seating position**
    - Some CR instructions allow 11-20” spacing

Lower Anchor Use With Non-standard Spaced Bars

- Use of center position with outboard LATCH anchors (if CR instructions allow)
  - Most vehicle manufacturers do not permit use in center rear unless it is designated as a LATCH position
    - Missing information does not mean that use is allowed.
  - Most CR instructions limit use to designated/approved vehicle seating position
    - Some CR instructions allow 11-20” spacing
  - Only install a CR in a center, “LATCH Compatible” position if both the vehicle manufacturer and CR instructions allow it.

Outboard LATCH or Middle Seating Position?

• Center seating position using the vehicle seat belt may be preferred to outboard seating position using LATCH.

• It is up to the caregiver and depends on CR fit in the vehicle.
  – Fit of CR in position
  – Ability to access CR
  – How many kids in back?
  – Back seat is safest (center or outboard)
Child Seat Installation (Seat Belt, Lower Anchor, Tether) In the case of tether installations, 28.3 percent of the 15,521 Forward-Facing Seats with Harness were tethered upon arrival to the events. Of those, 59 percent were properly tethered.
There is room for improvement:

- Only 28% of FF CRs used a tether.
- Of those who did use a tether, 59% used it correctly.
- Technicians were able to assist families achieve a secure fit for 99% of the child restraints!

Courtesy of NHTSA Image Gallery
IIHS/UMTRI Vehicle Seat Design Study
April 12, 2012

• Insurance Institute for Highway Safety (IIHS) and University of Michigan Transportation Research Institute (UMTRI) studied LATCH hardware and rear seat designs to determine what helps make LATCH easier to use

• Less than a quarter of vehicle models have “easy-to-use” LATCH

• Tethers used at all 48% of the time
  – When used, 54% were incorrect, either too loose or used incorrect anchor

READ MORE

Watch the video “Vehicle seat designs make installing child restraints difficult.”

Watch the video: http://www.iihs.org/video.aspx/releases/pr041212
IIHS/UMTRI Vehicle Seat Design Study
April 12, 2012

Click the link below to read the “Status Report” newsletter article:

Curbside: Accessing Anchors

- Lower anchors may be hidden or difficult to access (to attach or remove)

Example: covers

BMW
Curbside: Accessing Anchors

Example: zippers
Curbside: Accessing Anchors

Example: velcro flap

BMW
Curbside: Accessing Anchors

Example: highly visible

GM Chevy Truck
Curbside: Accessing Tether Anchors

Easy access

Difficult access
Tether Anchorage Issues

- **Off center tether anchors**
  - up to 20 degrees is acceptable
- Usually, only one CR can be attached to it at a time
  - Some pickup trucks may allow more than one tether to attach to the same anchorage.

- **Attaching and tightening the top tether strap**
  - Over-tightening may make it difficult to release the tether.
  - Always consult CR instructions and vehicle owner’s manual

Source: LATCH manual, 2011
Curbside: Accessing Tether Anchors

• Top tether anchors may be difficult to access or identify.
Curbside: Accessing Tether Anchors

Which is the tether anchor?

Toyota
Curbside: Accessing Tether Anchors

Which is the tether anchor?

Toyota

No

Yes
Curbside: Accessing Tether Anchors

Example: Tethers that are easy to see and are accessible are more likely to be used
Test Your Knowledge

What options would you offer a parent/caregiver when there isn’t enough room to tighten the tether?

a. Consult vehicle manual
b. Use another seating position
c. Use a slightly loose tether
d. All of the above
Answer:

What options would you offer a parent/caregiver when there isn’t enough room to tighten the tether?

a. Consult vehicle manual
b. Use another seating position
c. Use a slightly loose tether
d. All of the above - Even a tether that is slightly loose will provide better protection than no tether at all.
Tether Anchorage Issues

• Routing varies! Check the manual first.
• Do not remove or modify a head restraint unless the owner’s manual specifically allows this.

Chevy Malibu, 2011; Instruction manual pg. 3-55
Chevy Avalanche, 2011; Instruction manual pg. 3-56
Other Possible Challenges

Some LATCH issues with hatchbacks, SUVs and bucket seats include:

- Stiff leather in new vehicles may make accessing anchors difficult.
- Extendable cargo covers may need to be removed or rolled back prior to attaching the top tether.
- Rear seat may need to be folded forward to route tether.
How Do Pickup Truck Tether Anchors Challenge A LATCH Installation?
Pickup Trucks and LATCH

- Some tethers will need to be attached with the seat back pulled forward (a). If so, make sure the webbing is accessible for tightening after the seat is pushed back up.
- Some models may use metal brackets (b) or webbing loops behind the seat (c) to redirect the tether to another anchor.

Source: 2011 LATCH Manual
Images courtesy of Safe Ride News
Large Hardware.
Small Loop.

Conventional routing

Contact the manufacturer for guidance.
New Options: Tether Guide

2011 Honda Ridgeline Pickup; Owners manual pg. 48-49
LATCH Weight Limits and High Weight Harness Child Restraints
Weight Limits for LATCH

Many vehicle manufacturers currently limit the use of their LATCH systems to restraints for children weighing up to 40 or 48 pounds.

Use of lower anchors and tethers should be discontinued when these limits are met.
What is the Lower Anchor Limit?

• The right choice is always to follow manufacturer guidance, using the lower limit if the CR and the vehicle limits are not the same.
  – Some manufacturers state the weight limit based on child weight, usually 40 or 48 pounds.
  – Others state the combined child weight and the CR weight can’t exceed of 65 pounds.

• However the weight limit is described, it must be followed.
What is the Lower Anchor Limit?

• Look for changes to CR labels in 2014 to provide child weight limits that take into account the weight of the CR.
• Recent amendments to FMVSS 213 scheduled to go into effect in February 2014 will require CRs to have a label stating that the lower anchors may be used to attach the CR to the vehicle seat up to a combined child and CR weight of 65 lbs. when the child is restrained by the internal harnesses.
• **What does this mean curbside?** The weight of the CR will have to be labeled and the caregiver must know the weight of their child to calculate their combined weight.
Weight Limits for LATCH

• Vehicle and CR manufacturers have the final word for their products.
• Lack of weight limit information does not mean approval beyond 65 pounds, combined child and CR weight.
• This is not a gray area where techs should provide pros and cons.
• Technicians must not ignore stated weight limits.
UMTRI Study

- Staff checked 95 vehicle manuals for 2010-2011 vehicles.
- Only found details about LATCH weight limits in Ford products.
- Ford usually lets you use tether and lower anchors with kids up to 48 pounds.
- When using the tether and the seat belt, Ford does not have a tether weight limit.

Source: Tech Update Winter 2011-12
This Just In… Chrysler

- Lower Anchor weight limits are now listed as 65 pounds – combined weight of the child and child restraint.
- For most current Chrysler vehicles, the tether can now be used, with a seatbelt, up to the recommended weight limit of the child restraint.
- This change is being made retroactively to the start of production of the current tether design for the affected vehicle families.
- Details and a list of affected vehicles may be found in the July 1, 2012 CPS Express: http://cert.safekids.org/ResourcesFAQs/CPSExpress.aspx
Weight Limits for LATCH

Have the caregiver contact the vehicle and CR manufacturer directly with questions relative to LA or tether use for children over stated weight limits.
Other Considerations

• Tethers offered on high-weight harness CRs are tested by CR (not vehicle) manufacturers to the top weight allowed by their instructions.

• Some vehicle manufacturers do not provide a maximum weight for tether use.
  – In these cases, err on the side of safety and assume a weight limit of 65 pounds, combined child and CR weight.
  – Lack of specific limits does not mean approval for use beyond 65 pounds combined weight
Curbside: Tethering
High-weight Harness CRs

- Special needs CRs may require tether use.
- Conventional CRs must meet federal standards for head excursion even **without** a tether.
- Contact the CR manufacturer for assistance.
Discuss the Options That Best Fit the Situation With the Caregiver

• Assess the child, the vehicle, and the type of child restraint available.

• In some cases, a booster may be an appropriate substitute for a HWH CR.

• The caregiver contacts the manufacturers for assistance beyond stated tether weight limits.

• Only manufacturers can provide the pros and cons for use beyond stated limits. Techs can’t make that judgment.
Always Read Instructions: Max Weight For LATCH Attachment

With the trend of high weight harnessed restraints, it remains critical to carefully read instructions. One example is the Sunshine Radian SuperLATCH attachment. The CR manufacturer approves lower anchor use to 80 lbs.

Since there must be agreement between the CR and vehicle manufacturers regarding lower anchor weight limits, only use LATCH to the lowest approved limit.

Using the above example, the Sunshine SuperLATCH is approved for use to 80 lbs. If the vehicle manufacturer has a 45 lb. (child weight) limit, do not use LATCH after the child weighs 45 lbs.

If there is no stated limit, only use LATCH until the child plus CR weighs 65 lbs, then secure the CR using the seat belt instead of the lower anchors to secure the CR.

Note: Depending on the weight of the CR, the weight of the child may be more or less than 45 pounds.
LATCH Advantages

• A top tether helps in vehicles with belt stalks positioned forward of the seat bight.

• This belt stalk design may make proper child safety seat installation difficult.
Use of a Seat Belt as a Tether Anchor

- CR and vehicle manufacturers may disagree about use of a seat belt as a tether anchor.
- Only use if both expressly state this is appropriate use of the seat belt.
- Missing information does not mean approval.

Source: 2011 LATCH Manual
Images courtesy of Safe Ride News
LATCH and Special Needs Seats

- Some car seat mfg. will supply a heavy-duty anchor
- Some car seat mfg. recommend 2 tether anchors to spread the crash forces
- There are more car seats with high weight harnesses (HWHs) but vehicle mfg. have maximum weights of 40 to 48 lbs. on anchors

Missing information does not mean it is allowed. **If you can’t find it in the instructions, assume a 65 lb. combined child and CR weight limit.**

Source: 2011 LATCH Manual
Image courtesy of Safe Ride News
School Buses and LATCH

- Required on new, small buses under 10,000 lbs. (also required to have lap belts)
- Some bus companies may offer LAs and TAs for large buses
- LAs will not eliminate all CR installation issues
Securing a Belt Positioning Booster

- More BPBs and combo seats have lower anchor and/or top tether attachments.
- BPBs do not require LATCH according to FMVSS 213 as the test only requires a lap/shoulder belt securing the test dummy.
- There may be a benefit of using LATCH to secure the CR when it is not occupied. Follow mfg instructions.
- Some manufacturers suggest stowing when not in use.
- Lower anchors and/or tethers could stabilize the seat, if permitted by the manufacturer.
Entanglement: Children and Unused Switchable Shoulder Belts

• Children may wrap an unused seat belt around their necks.

• Consider buckling the seat belt, activate the switchable retractor, and install the child restraint on top of the belt system with LATCH.

• Consider buckling and locking adjacent belts.
LATCH After a Crash

- LATCH anchors should be inspected by the dealer following a crash (if they were used).
- If in doubt, use the vehicle seat belt for child restraint installation.
What Does LATCH Mean To The Technician Curbside?

We need to help parents understand the benefits of using a tether regardless of whether the forward facing CR is installed with a seat belt or with lower anchorages.
What Does LATCH Mean To The Technician Curbside?

- Promote tether use when appropriate!
- Point out tether locations even if not being used at the time so caregivers are aware of their location and what they are for.
What Does LATCH Mean To The Technician Curbside?

- Work with the parent to identify approved seating positions with LATCH in the owner’s manual.
- Show parent any LATCH labels in the vehicle.
- Teach the parent how to properly secure child restraint to those anchors.
- Show caregivers references to weight limits in vehicle and CR manuals.
What Does LATCH Mean To The Technician Curbside?

Instruct parents on proper storage of lower anchors when using the seat belt system – use the owner’s manual as a resource.
What Does LATCH Mean To The Technician Curbside?

More examples of proper storage of lower anchors when using the seat belt.
What Does LATCH Mean To The Technician Curbside?

In the event of a crash, not only may the air bags and CRs need to be replaced.

Seat belts and LATCH anchors should also be inspected by the dealer.
What Does LATCH Mean To The Technician Curbside?

• **Always involve the caregiver**
  – They do the installation properly
  – They can explain why it is important to use the CR correctly.
  – They are able to teach others how to properly use the CR in their vehicle.

• **Remember: Learn, Practice, Explain!**
What Does LATCH Mean To The Technician Curbside?

• “Learn and practice” the new seats on the market by going to a retail store, read the instructions so you can “explain” to parents and caregivers.
Stay Current

Go to used and new vehicle dealerships, attend local auto shows to review the new vehicles, read the manuals, check out the new features
Tools of the Trade

Download the manual:
Go to www.cpsboard.org
and click on
TRAINING > Training Manuals
http://www.cpsboard.org/techmanual.htm
Tools of the Trade

- 2012 Child Restraint Manufacturers’ Instructions with Summary Sheets
  - Take the quiz for 1 CEU
  - Available through http://www.carseat.org
Tools of the Trade

http://www.saferidenews.com

Take the 2011 LATCH manual (latest edition) quiz for 1 CEU
Conclusion: Don’t Guess!

Technology changes daily
✓ Child safety seats
✓ Vehicles
✓ LATCH

When in doubt, check your manuals or call the manufacturer.
Presentation originally submitted/developed by Safer New Mexico Now and Safe Kids USA with input from Safe Ride News.

Thank you!

Please note it has been edited by the CPS Board.
Take the Quiz:

http://www.cpsboard.org/ceus_quiz4.htm#quiz