

Child Passenger Safety on School Buses



NATIONAL TRAINING



Handout • CSRS with Cam Wraps

WHAT IS A CAM WRAP?

A **CSRS anchorage method** in which strong, adjustable webbing wraps vertically around a school bus seatback (through the seat bight). Webbing that forms a safety restraint for the child is either permanently attached to or hooked onto the cam wrap.

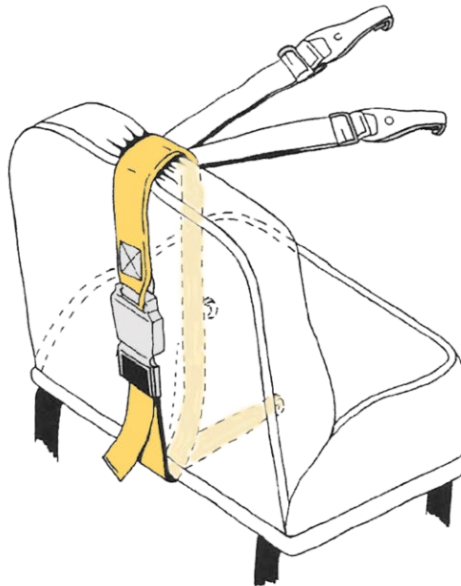


Diagram at right shows a "seat mount" cam wrap with attachment points for a safety vest.

PROS AND CONS OF USING CSRS WITH CAM WRAPS

Cam wraps were made just for school buses, so they have many benefits for usage in this environment. However, there are also a few disadvantages.




PROS

- Lightweight and can easily fit between school bus rows.
- Easy to move and store when not in use.
- Row capacity isn't usually limited. (Most fit three to a 39" bench.)
 - Some may be used on FMVSS 222 seating (if no seat belt or lower anchors needed).
- Some models, in particular safety vests, have features that discourage children from unbuckling and may be an option for children who have behavioral issues.

CONS

- There is no rear-facing option.
- All models seat the child fully upright.
- Most provide no side support for the child.
- Limits the use of the row behind the CSRS to restrained occupants only.

CSRS WITH CAM WRAP—TYPES

Belt Converters	School Bus Only CSRS	Safety Vests
		
<p><i>Belt converter CSRS add upper-body and crotch-strap protection to a lap belt, turning that 2-point form of restraint into a 5-point CSRS.</i></p>	<p><i>School bus only CSRS feature a 5-point harness attached to a seatback and cushion. May be installed on any type of school bus seating; seating need not be reinforced as no seat belt is needed.</i></p>	<p><i>A safety vest is made up of two parts: a closely fitted 5-point vest made of webbing that encircles the body; and a cam wrap seat mount. Safety vests may be used on any type of bus seating; the seating does not have to be reinforced.</i></p>
<p>TYPICAL WEIGHT CAPACITIES¹</p> <p>Minimum: 25, 30 or 31 pounds</p> <p>Maximum: 168 pounds</p>	<p>TYPICAL WEIGHT CAPACITIES¹</p> <p>Minimum: 20 or 25 pounds</p> <p>Maximum: 65 or 90 pounds</p>	<p>TYPICAL WEIGHT CAPACITIES¹</p> <p>Minimum: 20, 31, or 81 pounds</p> <p>Maximum: XS/S—85 or 90 pounds M/L—165 or 168 pounds</p>

¹ Check with manufacturer for age minimums, height limits, and options for custom-made sizing.

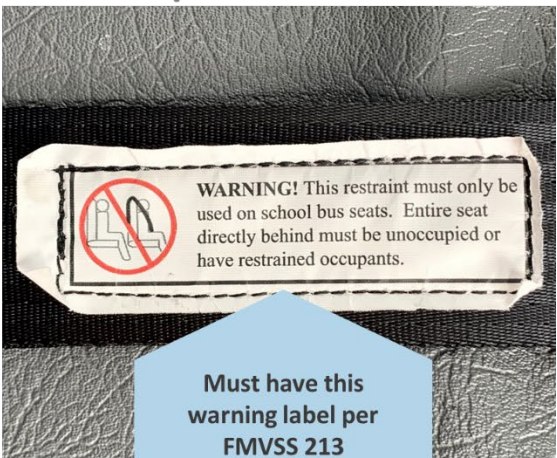
REQUIREMENTS FOR CSRS WITH A CAM WRAP USE

Row Behind



Must be unoccupied
or used by
restrained occupants

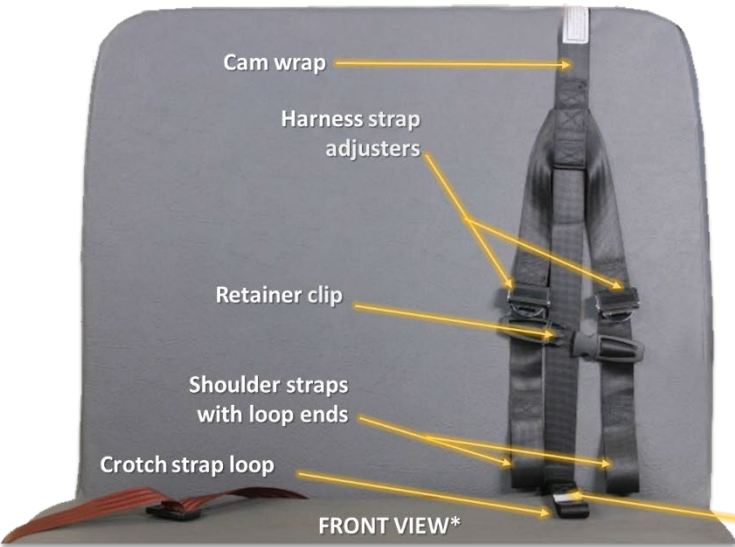
Cam Wrap Label



WARNING! This restraint must only be used on school bus seats. Entire seat directly behind must be unoccupied or have restrained occupants.

Must have this
warning label per
FMVSS 213

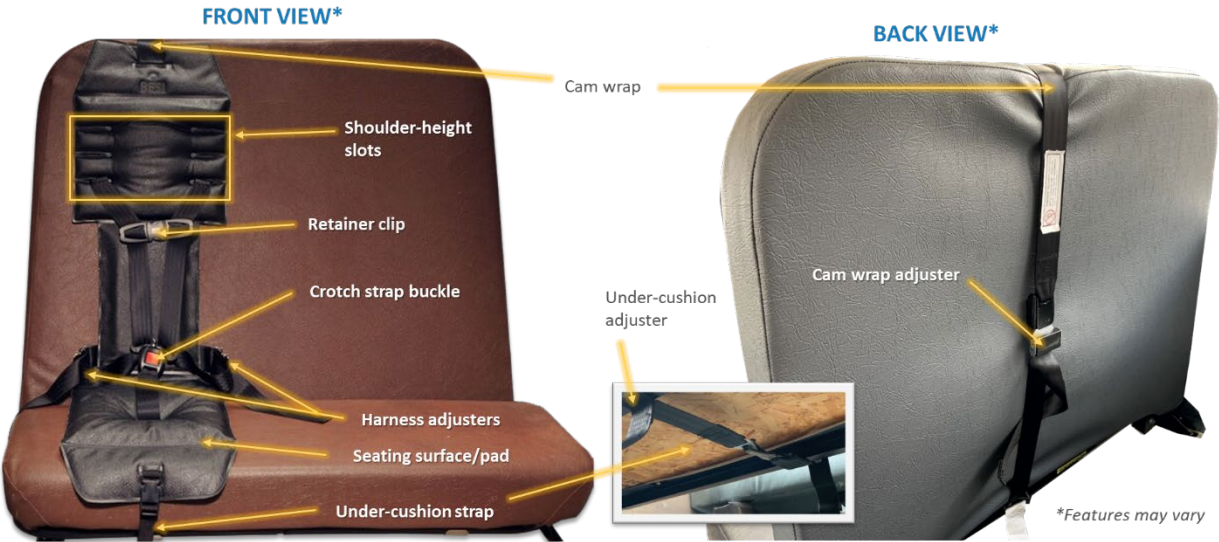
BELT CONVERTER-PARTS



**Features may vary*

Required FMVSS 213 warning label

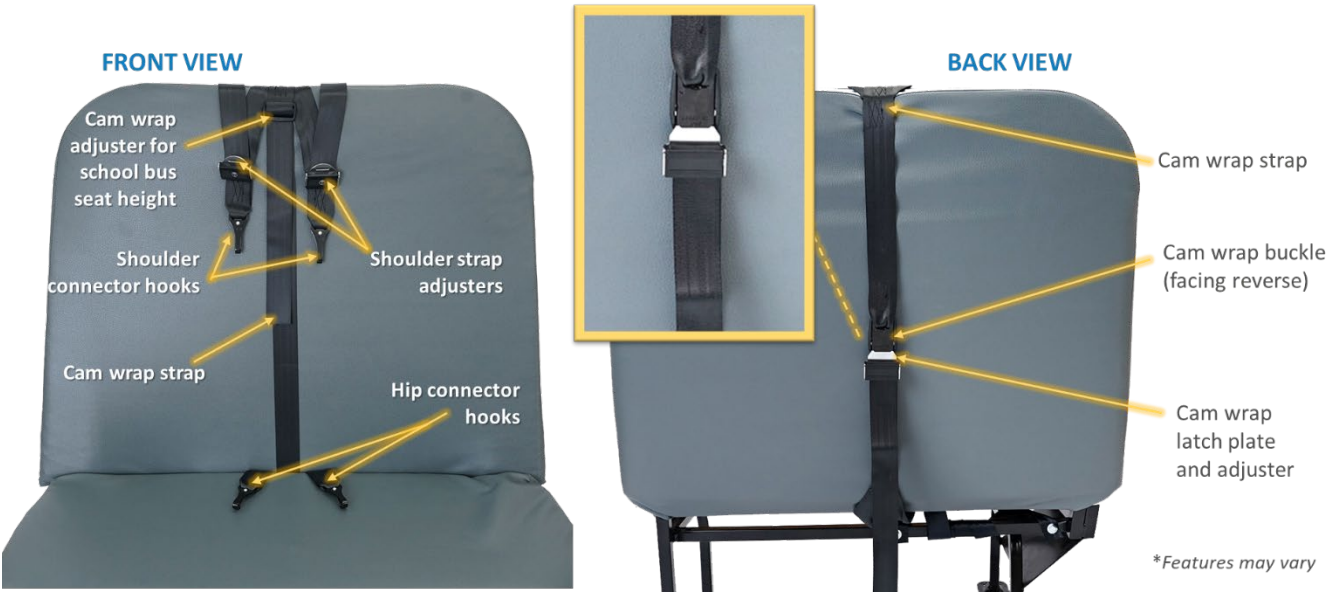
SCHOOL BUS ONLY CSRS—PARTS (SINGLE CAM WRAP)



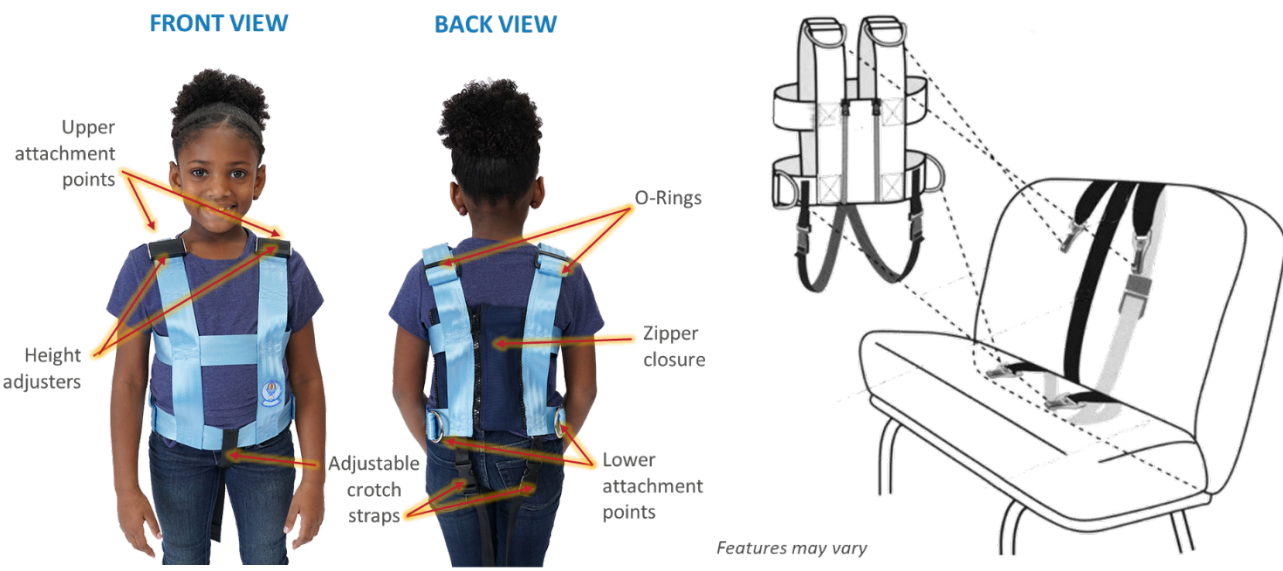
SCHOOL BUS ONLY CSRS—PARTS (DOUBLE CAM WRAP)



SAFETY VEST CSRS—SEAT MOUNT PARTS



SAFETY VEST CSRS—SAFETY VEST PARTS



PROGRESS CHECK

- What types of CSRS attach using a cam wrap?
- Why are cam wraps suitable for use on buses but not other vehicles?
- Which CSRS have the highest occupant weight ratings?
- Which CSRS has a strap that runs under the school bus seat cushion to stabilize the CSRS on the cushion?
- Which CSRS often features a zipper? Where does the zipper go?



NOTES
