

NTSB – Child Passenger Safety in Automobiles and Aircraft

Moving Forward – Solutions that work

David Campbell
David E. Campbell & Associates, Inc.
Technical Consultant to the Juvenile Products
Manufacturers Association.

Topics to be covered

- **Innovative child restraint designs and features that enhance protection for children.**
- **Changes manufacturers are making to make the installation of child restraints (CRS) easier for caregivers and parents.**
- **Challenges with the compatibility of child restraint systems (CRS) and automobiles.**

Innovative CRS designs and features that enhance protection for children.

- *Changes in the last few years*
 - *J 1819*
 - *Rear-facing to 30 lbs. or more*
 - *Harness weights increased from 40 to 65 lbs. or higher*
 - *LATCH/Tether*
 - *Rear-facing recline adjustment*

Innovative CRS designs and features that enhance protection for children.

- *Recent and emerging improvements*
 - *Design*
 - *Improvements in belt fit - Boosters*
 - *Harness design*
 - *Energy absorbing design and materials*
 - *Side impact protection*
 - *Rotating seat for loading infant or child*
 - *Portability*
 - *Appearance to entice children to use*

Innovative CRS designs and features that enhance protection for children.



Innovative CRS designs and features that enhance protection for children.

- *Recent and emerging improvements*
 - *Testing*
 - *Side impact testing*
 - *Higher severity – NCAP*

Changes being made so installation of CRS easier for caregivers and parents.

- *Changes in the last few years*
 - *Stay in car base*
 - *Adjustable foot in rear facing ICS to provide the best practice recline*
 - *NHTSA Ease of Use*
 - *Color coding for RF.FF, BPB use*
 - *Built-in shoulder belt lock-off for L/S belt*
 - *Tension indicators on tether and shoulder belts (IMMI)*
 - *LATCH use with BPBs*

Changes being made so installation of CRS easier for caregivers and parents.

- *Recent and emerging improvements*
 - *Design*
 - *CCS stay in car base*
 - *LATCH and tether storage accommodation*
 - *Accommodate vehicle seat contours*
 - *LATCH System*
 - *LATCH Compatibility*
 - *Attachment systems*
 - *Higher weight LATCH*
 - *Single pull LATCH adjustment center pull*

Changes being made so installation of CRS easier for caregivers and parents.

- *Recent and emerging improvements*
 - *Parental interface*
 - *Electronic monitoring and feedback*
 - *Belt tensioning*
 - *Built-in belt tensioners*
 - *Lap belt path design – Ease of adjustment*
 - *Inter-industry activity on LATCH anchor strength recommendations*

Challenges with compatibility of CRS and automobiles.

- *Changes in the last few years to improve compatibility*
 - *J1819*
 - *LATCH/Tether*
 - *CRS Tether length/vehicle location*

Challenges with compatibility of CRS and automobiles.

- *Current challenges*
 - *Tether anchor location/tether length*
 - *LATCH anchor/CRS connector access*
 - *Location of centerline of LATCH relative to CL seating position*
 - *Shoulder belt anchorage points “D” ring – backless booster, larger high back booster*
 - *Head restraints*
 - *Vehicle seat contours*
 - *Roof line or head liner/CRS height – larger CRS*

Thank You !

David Campbell

David E. Campbell & Associates, Inc.

3215 Greenwich Road

Wadsworth, OH 44251

Telephone: 330-769-2102

E-mail: d.campbell@deca-inc.net