



ECE R129 – Child safety upgrade

How to highlighten the safety benefits?

and

proposal of what could be done to be in line with
original aim of the group

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ORIGINAL AIM OF ECE R129

- The development of the ECE R129 has been initiated :
 - To improve the minimum level of safety that a child restraint system has to provide
 - To simplify consumers' life
 - To enhance the compatibility between CRS and cars
- It is based on:
 - Real life observations
 - ECE R44
 - Recent research works outcomes

CONTEXT

- Safety improvements are globally recognized for Phase I
- Communications and publications have helped to promote phase I outside of the group
- Following phases, from outside of the IG CRS group, works seem not to be fully clear
- Regular reports to GRSP, enhancements and differences with ECE R44 are not as visible as for Phase I

Original philosophy for ECE R129

- TO CONSIDER THE THREE FOLOWING POINTS
 - Real life observations
 - Protection of vital body segments
 - Compatibility between car and CRS

Phase I - Application

- Philosophical approach:
 - Real life observations:
 - Reduction of misuse needed
 - Stature basis preferable
 - Protection of vital body segments
 - RWD Facing as long as possible (accident data)
 - R44 dummies are limited in terms of measurements and not designed for side impacts
 - Side impact protection is a priority (accident / biomechanical data)
 - Compatibility between car and CRS.
 - R44 sled representative of old cars
 - Anti rotational device compatibility
 - ISOFIX geometrical characteristics



Phase I - Achievements

- Philosophical approach:
 - Real life observations:
 - Reduction of misuse = ISOFIX based systems
 - Stature basis chosen
 - Protection of vital body segments
 - RWD Facing up to 15M (as minimum)
 - Q dummies and criteria
 - Side impact
 - Compatibility between car and CRS.
 - R14 and R16 modifications
 - New sled definition
 - I SIZE indications both on cars and CRS

Phase II

- Accidentology shows different figures for CRS belonging to this group than the ones used in phase I (integral restraints for child) as the principle is to use the seat belt to restrain the child in the system.
- Interaction between dummy and seatbelt not optimized,
- Q Dummy global behavior in frontal impact questionable regarding submarining
- The feeling is that the philosophy applied during Phase I has been often put at the second stage during discussions

Phase II - Application

- Real life observations:
 - Reduction of misuse =
 - Need to properly guide the seatbelt at the levels of thighs and shoulders.
 - Children are often buckling themselves
 - Use of these systems for children too young, no use of any CRS too early
 - Very often use of low back boosters only (approved from 22 to 36kg)
- Protection of vital body segments
 - Abdominal and thoracic areas in frontal impact (accident data)
 - Need of side impact protection (accident data / biomechanical works)
 - No benefit shown for use of ISOFIX anchorages?
- Compatibility between car and CRS.
 - Lack of gabarit for booster systems;
 - Difficulty to buckle the seatbelt by children
 - Need of car protection for low back boosters



Phase II - achievement

– Real life observations:

- Reduction of misuse = highback boosters up to 135cm.
- Use of these systems for children too young, no use of any CRS too early : not a regulatory purpose but governments and consumer organisations are present in the group.
- The use of universal low back boosters authorized only for children higher than 135cm.

– Protection of vital body segments

- Abdominal sensors considered (dummy behavior works on-going)
- Chest deflection could be included for frontal impact (dummy instrumentation works on-going)
- Side impact protection tested for high-back boosters
- Q dummies and criteria
- Any benefit for use of ISOFIX anchorages? (on-going work results to be included)
- But compatibility issues with the adult seat belt.

– Compatibility between car and CRS.

- New gabarit
- Definition of characteristics for low back boosters

Phase III - Application

- Reminder : dedicated to integral systems that have to be installed by the vehicle seatbelt
- Philosophical approach exactly the same as for Phase I

Phase III - Achievements

- Philosophical approach:
 - Real life observations:
 - Stature basis chosen
 - Protection of vital body segments
 - RWD Facing up to 15M (as minimum)
 - Q dummies and criteria
 - Side impact
 - Compatibility between car and CRS.
 - New sled definition

REMAINING ITEMS

– Real life observations:

- **PHASE I:** ok
- **PHASE II:**
 - give an indication/definition of seatbelt position to ensure that the seatbelt is correctly positioned on the shoulder
 - Ensure that the seatbelt is properly positioned on the dummy thighs
 - Do not allow possibility of geometrical misuse of seatbelt route (over the armrests)

NOTE: In addition to the other points of Phase II, boosters corresponding to such criteria good be then considered as Enhanced Child restraint Systems compared to many of the ones approved according to R44

- **PHASE III:** define what is a simple way to fix the CRS to the vehicle using the seatbelt, forbid all systems that are not corresponding to this definition.

NOTE: Same as above but for Integral belted systems

– Protection of vital body segments

- **ALL PHASES:** Leave the door open for abdominal and chest criteria, and all Q dummies improvements
- **PHASE II:** Include conclusions on results on ISOFIX benefit if any, for booster systems

– Compatibility between car and CRS.

- **ALL PHASES: MUST BE OK BY THE END**

THANKS FOR YOUR ATTENTION

