



Type-approval of integral shield  
systems in UN Regulation No. 129  
**Proposals for discussion**

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# Types of shield systems

## A reminder...

### Integral shield system

Vehicle seat belt not used



Included in R129 (Phase 1)

### Non-integral shield system

Vehicle seat belt holds shield in place



Not included in R129 yet (Phase 3?)

Non-integral shields typically convert to booster seats for older children

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This presentation applies to integral shield systems

# Component requirements

## **Application to all ECRS**

- Component requirements (Para. 6.7) are applicable to any ECRS that features the component; however, this can be misunderstood. For clarification:

Paragraph 6.7., amend to read:

“6.7. Provisions applicable to individual components of the restraint

This paragraph is applicable to any such components that are found on the Enhanced Child Restraint System, regardless of its means of restraint.”

# Component requirements

## **Buckle strength**

- Buckle strength requirements should apply to all buckles, not just those on harness systems:

Paragraph 6.7.1.8.2., amend to read:

“6.7.1.8.2.            Depending on the mass limit declared by the manufacturer, a ~~harness~~ buckle shall withstand:”

# Component requirements

## **Conditioning of adjusters**

- Conditioning test for adjusters is applicable only to devices mounted directly on a ECRS. A test is needed for adjusters connected to a strap:

Paragraph 7.2.6.2., insert to read:

“7.2.6.2. Conditioning test for adjusters connected to a strap (not directly mounted to the ECRS)

Install the largest dummy for which the restraint is intended, as if for the dynamic test, including the standard slack as specified in paragraph 7.1.3.5. above. Mark a reference line on the strap, where the free end of the strap enters the adjuster.

Remove the dummy and place the restraint in the conditioning rig shown in Figure 2, Annex 15. The strap shall be cycled for a total distance of not less than 150 mm through the adjuster. This movement shall be such that at least 100 mm of strap on the side of the reference line towards the free end of the strap moves through the adjuster.

If the length of strap from the reference line to the free end of the strap is insufficient for the movement described above, the 150 mm of movement through the adjuster shall be from the fully extended strap position.

The frequency of cycling shall be  $10 \pm 1$  cycles/minute, with a velocity on "B" of  $150 \pm 10$  mm/sec. This process should be conducted for each adjuster which is part of the retention system of the child within the restraint.”

# Component requirements

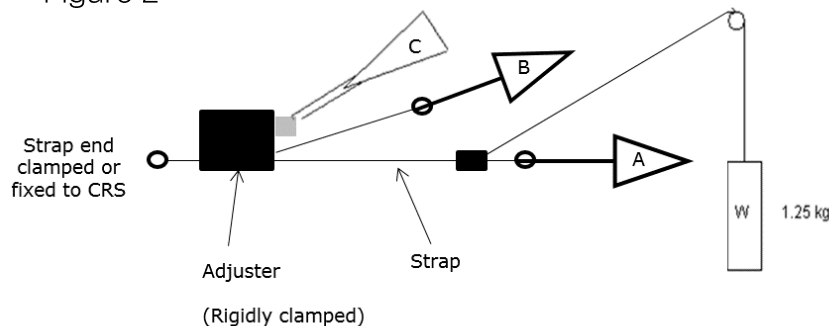
## Conditioning of adjusters

- Procedure developed by TRL:

Annex 15, amend to read:

Description of conditioning of adjusters connected to a strap

Figure 2



1. Method
- 1.1. Rigidly clamp the adjuster
- 1.2. With the strap set at the reference position described in paragraph 7.2.6., withdraw at least 50 mm of strap from the adjuster by pulling on the free end of the strap.
- 1.3. Attach the adjusted part of the strap to the pulling device A.
- 1.4. Activate the adjuster (C) and pull at least 150 mm of strap through the adjuster. This represents half of one cycle and puts pulling device A to the maximum strap extraction position.
- 1.5. Connect free end of strap to pulling device B.

2. The cycle is:
  - 2.1. Pull B at least 150 mm whilst A exerts no tension on the strap.
  - 2.2. Activate the adjuster (C) and pull A whilst B exerts no tension on the free end of the strap.
  - 2.3. At the end of stroke, de-activate the adjuster.
  - 2.4. Repeat cycle as specified in paragraph 6.7.2.7. of this Regulation

# Reducing potential misuse modes

## **Convertible systems**

- Convertible ECRS can have means of restraint intended for one orientation only (e.g. harness when RF and shield when FF).

Paragraph 6.6.4.1.7., insert to read:

- “6.6.4.1.7. In the case of a convertible integral ECRS that is equipped with a means of restraint of the child that is intended for one orientation only, the dynamic test shall be carried out as follows:
- 6.6.4.1.7.1. With the means of restraint used in the orientation for which it is intended;
- 6.6.4.1.7.2. With the means of restraint used in the orientation for which it is not intended, unless a mechanism is provided to prevent such incorrect use.”



# Reducing potential misuse modes

## **Shield identification as part of an ECRS**

- It should be possible to identify an impact shield as being part of an ECRS:

Paragraph 4.9., insert to read:

“4.9. An impact shield that is not permanently attached to the chair shall have a permanently attached label to indicate the make and model of the ECRS to which it belongs. The minimum size of the label shall be 40 x 40 mm.”

# Reducing potential misuse modes

## **Multi-category ECRS**

- Premature graduation to booster seat use is a risk for all multi-category systems, not just shield systems. This can be addressed through labelling:

Paragraph 4.10., insert to read:

“4.10. Multi-category Enhanced Child Restraint Systems that feature different methods of restraint according to the child’s stature, shall have a permanently attached label to inform the user of the appropriate method to use for a given stature range.

The label shall be visible to the person installing the child restraint in a vehicle, with a minimum size of [40 x 60 mm]. The label shall feature a pictogram of each restraint configuration adjacent to the stature range”.

# Adjustment of the shield

## **Internal geometry**

- The test requirements (impact and overturning) can be met only if the shield fits correctly over its declared stature range; nevertheless, this could also be explicitly required in the internal geometry assessment:

Paragraph 6.3.2.1., amend to read:

“6.3.2.1. Internal geometric characteristics

....

In addition, the Technical Service shall verify that an impact shield, if present, is capable of being adjusted to fit children across the full size range declared by the manufacturer. This shall be assessed using dummies that correspond to the limits of the size range.”

# Open items for discussion

## **Removal of components**

- Shields are designed to be removable to allow the child to be placed in the seat, and to be removed quickly following a collision.

Paragraph 6.2.3. currently reads:

“6.2.3. It shall not be possible to remove or detach without the use of specific tools, any components not designed to be removable or detachable. Any components that are designed to be removable for maintenance or adjustment purposes shall be so designed as to avoid the risk of incorrect assembly and use, and the assembly and disassembly process shall be explained in detail in the restraint user guides. Any harness and belt shall be capable of its full range of adjustment without disassembly.”

- Extending this requirement to shields presents too great a risk of trapping children following a collision



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