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Assessment of Automatic Passenger Airbag Disabling Systems

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Assessment of Automatic Passenger Airbag Disabling Systems

1. Introduction

Euro NCAP recognises the need to introduce a standard method of assessment for automatic passenger airbag disabling systems fitted to vehicles going through the programme.

The laboratory must check if the minimum requirements are followed:

- Airbag is OFF when using a Rearward Facing CRS
- Airbag is ON for a 5th occupant and above

The rest (forward facing CRS + child alone) is the responsibility of the OEM and there are different strategies. The following requirements and test matrix aim to cover a variety of possible occupant sizes and installation modes.

2. Requirement for Airbag Status

| Occupant | Requirement for Airbag Status | | | | | Can it be done by Lab? | |
|----------|---|--------------------------------|-------------------------------|----------------------------|---------------|---|-------------------------------------|
| | Rearward Facing CRS (can be Group 0 / 0+ / 1 / 2) | Forward Facing CRS (= Group 1) | Highback booster (=Group 2/3) | Booster cushion (=Group 3) | No CRS | The system does not need a real human being | The system needs a real human being |
| new born | OFF | forbidden | forbidden | forbidden | forbidden | Yes | No |
| 1.5 yo | OFF | ? (1) | forbidden | forbidden | forbidden | Yes | No |
| 3 yo | OFF | ? (1) | ? (1) | forbidden | forbidden | Yes | No |
| 6 yo | OFF | ? (1) | ? (1) | Forbidden (2) | forbidden | Yes | No |
| 10 yo | N/A * | N/A | ? (1) | ? (1) | forbidden (2) | Yes | No |
| 5th | | | | | ON | Yes | Yes |
| 50th | | | | | ON | Yes | Yes |
| 95th | | | | | ON | Yes | Yes |

Shaded area = Mandatory minimum requirements

N/A*: in theory it is possible to have a group 3 rwd facing CRS but none are known at present to exist.

(1) It is the decision from the OEM. There is no mandatory status requirement, however if strategy is airbag ON OEM should show that this does not lead to higher risk than with airbag OFF. For CRS installations involving a child the weight range for the various groups for which the CRS is approved will be adhered to.

(2) Not forbidden in all EU countries.

3. Test Matrix

| Occupant | Installation to checks | | | | |
|----------|--|---|---|----------------------------------|------------|
| | Rearward Facing CRS (can be Group 0 / 0+ / 1 / 2) | Forward Facing CRS (= Group 1) | Highback booster (=Group 2/3) | Booster cushion (=Group 3) | No CRS |
| new born | #1 - Cabriofix Belted #2 - Cabriofix B+L | forbidden | forbidden | forbidden | forbidden |
| 1.5 yo | #1 - Cabriofix Belted #2 - Cabriofix B+L #3 - Cabriofix I+L (if Isofix on front seat) | #4 - Romer King | forbidden | forbidden | forbidden |
| 3 yo | #5 - Britax Elite | #4 - Romer King #6 - Duo I+S (if Isofix on front seat) | #8 - KidFix Belted #9 - KidFix B+I (if Isofix on front seat) | forbidden | forbidden |
| 6 yo | #5 - Britax Elite | #7 - Britax Advansafix III SICT B+I (if Isofix on front seat) | #8 - KidFix Belted #9 - KidFix B+I (if Isofix on front seat) | #10 - KidFix cushion only Belted | forbidden |
| 10 yo | not tested | not tested | #8 - KidFix Belted #9 - KidFix B+I (if Isofix on front seat) | #10 - KidFix cushion only Belted | forbidden |
| 5th | | | | | real human |
| 50th | | | | | real human |
| 95th | | | | | real human |

Installation of CRS listed in the table above and settings are done according to “Installation of Top Pick List Child Restraints” (TPL) in the Testing Protocol – child occupant protection.

List of child seats needed:

CRS on TPL?

| | |
|--|-----|
| #1 – Maxi Cosi Cabriofix Belted | Yes |
| #2 – Maxi Cosi Cabriofix + EasyBase 2 B+L | Yes |
| #3 – Maxi Cosi Cabriofix + FamilyFix I+L | Yes |
| #4 – Britax Römer King II LS Universal | Yes |
| #5 – Britax Römer Two-way Elite Uni Fwd & Semi-Uni Rwd | No |
| #6 – Britax Römer Duo Plus I+S | Yes |
| #7 - Britax Römer Advansafix III SICT B+I | No |
| #8 - Britax Römer KidFix XP Belted | Yes |
| #9 - Britax Römer KidFix XP B+I | Yes |
| #10 Britax Römer KidFix XP cushion only Belted | Yes |

Isofix CRS (#3, #6, #7, #9) only if Isofix on front seat. Seat #5 has universal approval for forward facing use but semi-universal approval when used rearwards facing. This shall be ignored for the purposes of assessing the airbag disabling system when used rearwards facing. The CRS is only a tool to check how the vehicle responds to a large

rearwards facing CRS and 6 year old placed on the front passenger seat. The vehicle does not have to be on the approved list of vehicles for use with this CRS for the purposes of this airbag disabling check only.

It should be noted that Euro NCAP has used a small selection of CRS available on the market in order to test a variety of CRS groups, orientation and attachment methods.

When dealing with automatic airbag disabling systems it should not be forgotten that the Child assessment protocol requires the following:

2.5.3 Additional Requirements for Automatic Switches Only

- a) The system must ensure that the airbag is OFF for ANY rearward facing CRS and obviate any risk associated with airbag deployment
- b) If, with the ignition on and with engine running or not, the airbag status can be changed, the entire system must immediately react to the change correctly. Systems will be checked once the vehicle diagnostics/system checks have been completed.
- c) The system must automatically re-activate the airbag when the seat is occupied by a person who is not required to use a child restraint.