Minimum Standard for Type Approval Testing of Active Deployable Systems of the Bonnet / Windscreen Area

Note:


Scope:

- Only type approval conditions considered according to the draft GTR or the EU Directive (assuming that EU Phase 2 is identical with the GTR), i.e.:
  - Passing the LEGFORM TEST
  - Passing the alternative UPPER LEGFORM TEST to bumper
  - Passing the HEADFORM TESTS
- Based on contact sensor techniques
- Marking up the vehicle in deployed or undeployed position may be made on the choice of the manufacturers.

All devices designed to protect vulnerable road users shall be correctly activated before and/or be active during the appropriate test. It shall be the responsibility of the applicant for approval to show that the devices will act as intended in a pedestrian impact.
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Testing:

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| 1 | Calculate the **head impact time** (HIT) for 6yo-child, 5%-female and 50%-male (50% is only needed when tests with the adult headform impactor are to be performed) in deployed position of the system, at a vehicle speed of 40km/h, at the centre of the vehicle, in walking posture, leg facing the vehicle is backwards, using an appropriate simulation tool.

HIT = time from first contact on bumper to time of head to bonnet contact.

The manufacturer and the Technical Services should agree the appropriate choice of the HIT (6yo or 5% or 50%) for each impact point. |

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| 2 | The manufacturer provides the **sensor time** of the system

*In principle:*

total response time (TRT) = sensor time (ST) + deployment time (DT) |

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| 3.1 | **Test of systems that remain in a permanent deployed position:**

Demonstrate:

TRT < HIT (6yo or 5% or 50%)

The system reaches and remains in the intended position before head impact.

The system can be supported in a representative way (e.g. spring system)

Perform **LEGFORM TEST** or **UPPER LEGFORM TEST** to bumper to measure TRT at the lifting device.

Perform **HEADFORM TESTS in deployed position** of the bonnet. |

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| 3.2 | **Test of systems that do not remain in a permanent deployed position:**

Perform "**dynamic" HEADFORM TESTS"

"dynamic" means:

Triggered ignition time of the deployable system and the headform propulsion device is needed. This shall be agreed between the manufacturer and the Technical Service, based on the HIT & ST. The HIT may be calculated as in item 1, but for the undeployed condition. |

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| 4 | **System without contact** sensors:

For systems without contact sensors the TRT has to be considered separately. |