“Active hood” systems test method

CLEPA proposal

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Background

Typical crash at 40 km/h
General remarks and limitations

- Supplement to both legal and consumer test methods
- Amendment to method for headform tests in the hood/bonnet area, to include also active systems (meaning systems like pop-up bonnets)
Test method in short

Consists of two parts:

- **Sensor test**
  EEWC WG17 Legform test at “difficult points” for sensing
  Bumper/sensor system only, protection devices disconnected
  - Test triggering capability
  - Determine max necessary time for sensing

- **Headform test**
  Hood/bonnet in active (or passive) mode
  - Activated with a time delay depending on sensing time to triggering
  - Head impact time delay varied between min and max time
Sensor tests

- EEVC WG17 legform
- Three “new” points (select most difficult for sensing)
- 40 km/h
- Clear firing signal must be produced*
- Determine maximum sensing time $T_{\text{sensor\_max}}$

*Note. Covers only systems with electrically deployed protection devices
Headform tests

Same test procedure as passive systems, but with a timing

- Protection device fired at a 1st time delay $T_{\text{fire}}$
- $T_{\text{fire}}$ determined by max sensor time $T_{\text{sensor max}}$
- Head impact at a 2nd time delay $T_{\text{impact}}$
Headform tests cont.

- $T_{\text{impact}}$ is varied between $T_{\text{impact\_min}}$ and $T_{\text{impact\_max}}$
- These values also depend on impact area
Lower speed performance

- Vehicle must meet the head requirements also at lower speeds
- If the Protection system is not activated up to a certain speed, the vehicle must meet the requirements passively
- Tests can be performed at any (lower) speed to prove this
- Note! Time delays always determined from the 40 km/h sensor test
Timing summary

Sensor test: Legform test to determine maximum sensing time (T_sensor_max). T0 is the first leg contact to bumper.

Headform test: Protection Device(s) fired at T_fire (value given from T_sensor_max) and head impact time delay can be varied between T_impact_min and T_impact_max. The values of T_impact_min and T_impact_max depend on the impact area on the hood, shorter time values on the forward part of the hood and longer time values on the rear part of the hood.