"Active hood" systems test method

CLEPA proposal

January, 2004

CLEPA
European Association of
Automotive Suppliers

Background
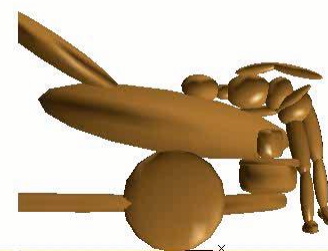
| O ms | 2O ms | 4O ms | 6O ms |

Typical crash at 40 km/h

CLEPA
European Association of
Automotive Suppliers

General remarks and limitations

■ Supplement to both <u>legal</u> and <u>consumer</u> test methods

■ Amendment to method for headform tests in the hood/bonnet area, to include also <u>active</u> systems (meaning systems like pop-up bonnets)

C L E P A
European Association of
Automotive Suppliers

Test method in short

Consists of two parts:

■ Sensor test

EEWC WG17 Legform test at "difficult points" <u>for sensing</u>

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

CLEPA
European Association of
Automotive Suppliers

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_sensor_max

*Note. Covers only systems with electrically deployed protection devices
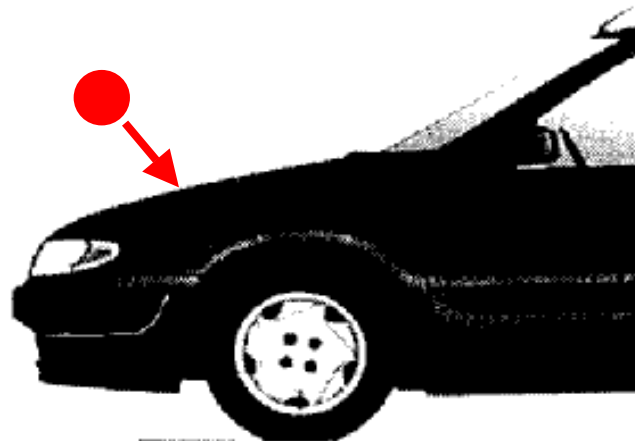
CLEPA
European Association of
Automotive Suppliers

Headform tests

Same test procedure as passive systems, but with a <u>timing</u>

- Protection device fired at a 1st time delay T_fire
- T_fire determined by max sensor time T_sensor_max
- Head impact at a 2nd time delay T_impact

CLEPA
European Association of
Automotive Suppliers

Headform tests cont.

■ T_impact is varied between T_impact_min and T_impact_max

■ These values also depend on impact area

90-
250 ms

60-
200 ms

1500-
2100 mm

1000
-1500 mm

distance

Wrap around

CLEPA
European Association of
Automotive Suppliers
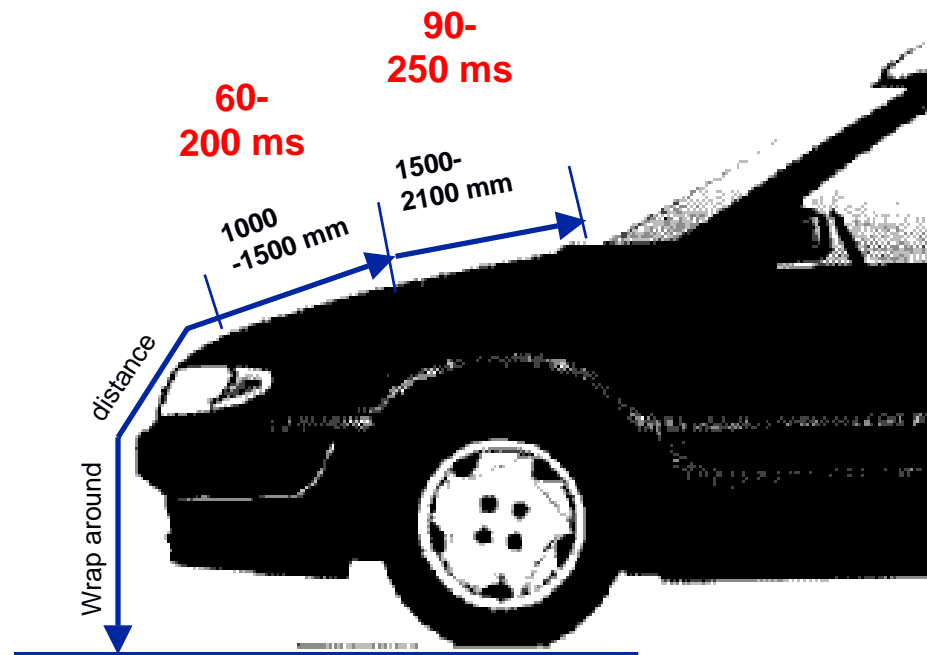
Lower speed performance

■ 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

CLEPA
European Association of
Automotive Suppliers

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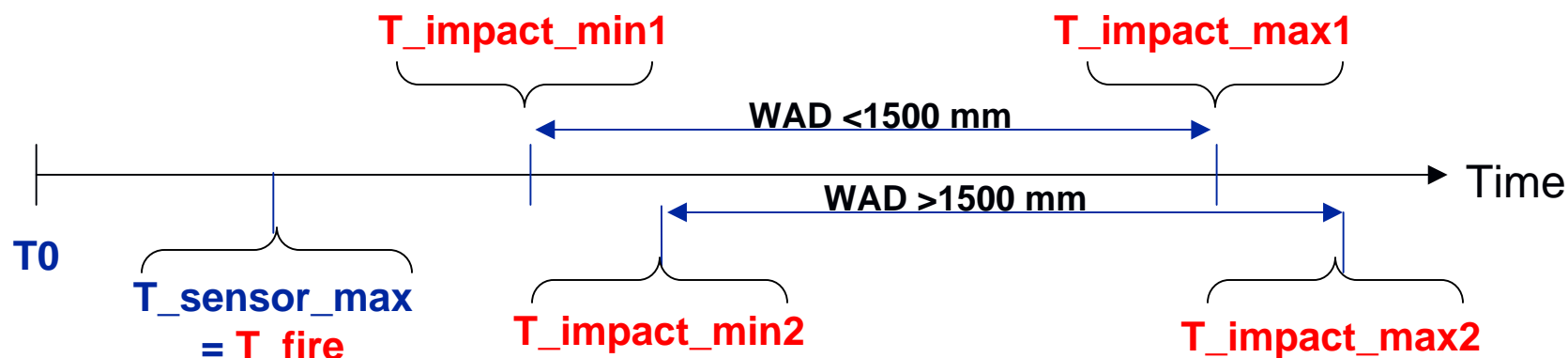
Sensor test: Legform test to determine maximum sensing time (T_sensor_max). T0 is the first leg contact to bumper.

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.

CLEPA
European Association of
Automotive Suppliers