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ASSESSMENT PROGRAMME

# Technical Bulletin

# Headform to Bonnet Leading Edge Tests

**Version 1.0**

**June 2014**
**TB 019**

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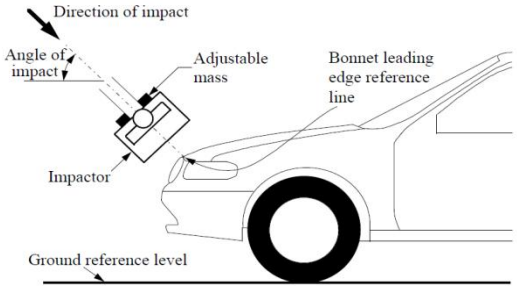
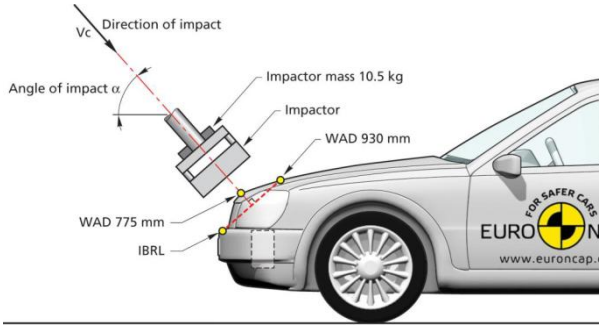
# 1. Background

With Euro NCAP Pedestrian Testing Protocol Version 8.0, a revised test with the upper legform impactor will be introduced. While the bonnet leading edge has previously been tested and assessed by default as a potentially injury causing part, the revised procedure is adopting Euro NCAP's philosophy of testing and assessing the injury risk for defined pedestrian's body regions, namely for the (adult) pelvis and the thigh in vehicle to pedestrian crashes.



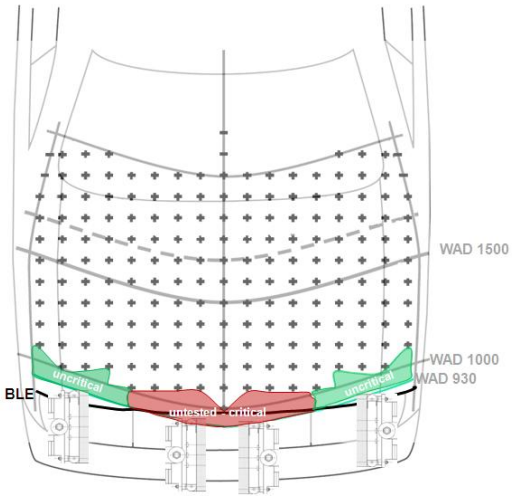

*Upper legform to bonnet leading edge test*




*Revised upper legform test. (Upper legform to WAD 775 mm test)*

In-depth accident data has revealed that, although not for a significant number of (adult) pelvis injuries, the bonnet leading edge is responsible for a high portion of severe injuries of other vulnerable road user body regions, for instance for persons of smaller stature.

While in most cases the protection potential of the leading edge will be covered by the revised upper legform test, rare cases will still occur where the bonnet leading edge reference line is precisely located in the area between the wrap around distances 1000 mm (forward limitation of the child headform test zone) and 930 mm (location of the upper load cell of the upper legform impactor, the upper limitation of the new upper leg test), an area which by definition is untested (Note: according to the new procedure, regardless the vehicle front geometry, at least the area between WAD 1000 mm and WAD 930 mm at vehicle longitudinal centerline will not be tested anymore. Due to the GRID definition, this untested area is getting larger moving laterally along the vehicle in outboard direction):

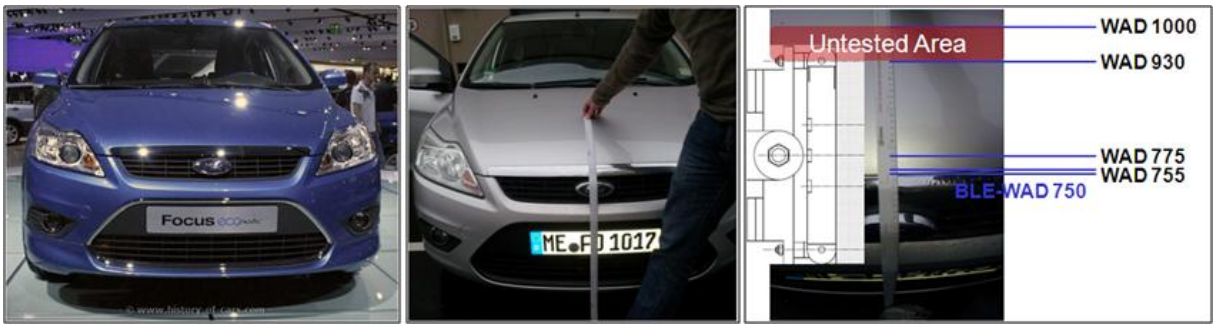



*BLE located between WAD 1000 and WAD 930 ➔ no test*


*Examples of vehicles where the BLE located between WAD 1000 and WAD 930*

## 2. Motivation

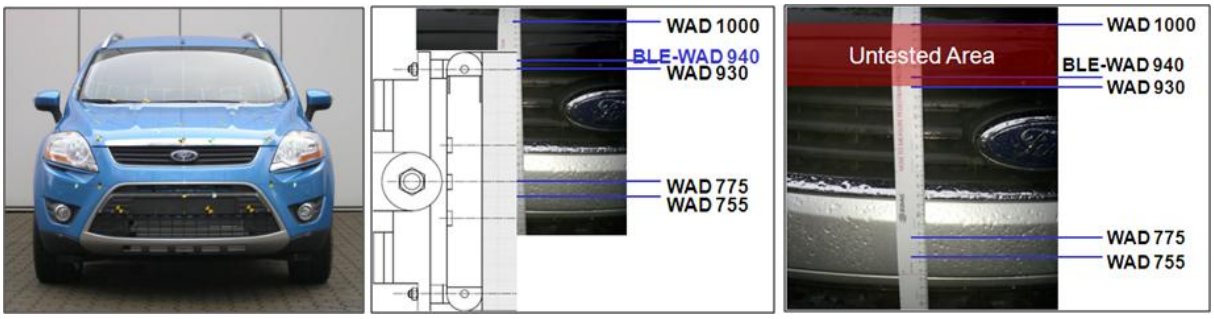
The area between WAD 1000 mm and WAD 930 mm is assumed to be uncritical when no hard structures / injury causing vehicle components are located under the surface.




However, if hard structures are located in this untested area (as it can be assumed for the bonnet leading edge and its periphery) the area should be regarded being critical in terms of VRU protection.

The headform to bonnet leading edge test, defined in the Technical Bulletin, is meant to assess the injury risk of the bonnet leading edge during a vehicle impact against a vulnerable road user in case of not being considered within the revised upper legform test. The headform to bonnet leading edge test is to be carried out in all cases where the **bonnet leading edge**

**reference line** is located between WAD 1000 mm and WAD 930 mm and thus not being tested by means of the revised upper legform test.

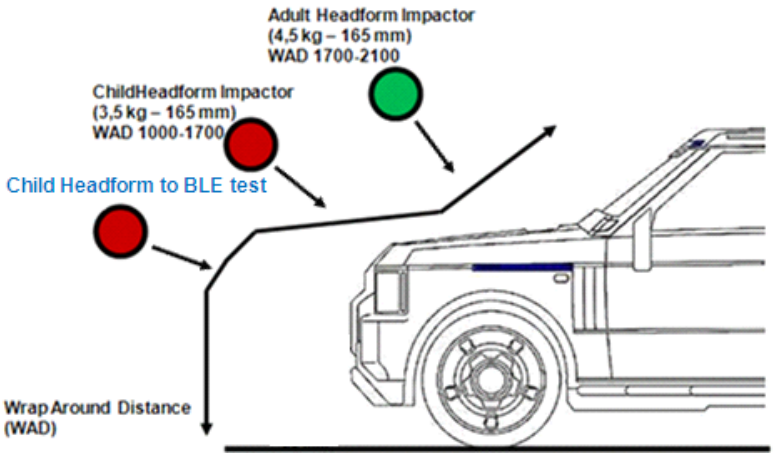



## 3. Procedure

**Headform monitoring tests to the bonnet leading edge reference line**

For the vertical longitudinal plane of any upper legform grid point determined in paragraph 3.11 of the pedestrian testing protocol where the bonnet leading edge reference line is located between WAD 930 mm and WAD 1000 mm, an additional test with the child headform impactor will be performed at the intersection of the vertical longitudinal plane with the bonnet leading edge reference line at an impact speed of 40 km/h under an impact angle of 20° ±2° to the Ground Reference Level.

The result of this test will be monitored against a HIC value of 650. Where a 'poor' test result has been achieved, Euro NCAP may choose to comment on this alongside the normal pedestrian protection score. The results of these tests will NOT be reflected in the pedestrian protection score or any other part of the overall assessment.



## 4. References

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