



ACEA

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PROPOSAL FOR A DEFINITION OF VEHICLES WITH HIGH BUMPERS AND JUSTIFICATION

Definition of High Bumper Vehicles (GR PS 143 rev1):

7.1.2 Upper legform to bumper test procedure:

Upper legform to bumper tests shall be carried out if the lower bumper height as defined in paragraph 3.18. at the test position is more than 500 mm. In case the lower bumper height at the test position is more than 400 mm but not more than 500 mm, the manufacturer can elect to perform an upper legform test instead of a lower legform to bumper test as defined in paragraph 7.1.1..

7.1.2.1. ~~If the lower bumper height at the test position is more than 500 mm and the manufacturer elects to perform an upper legform test instead of a lower legform test,~~ If an upper legform test to bumper is to be carried out, the selected target points shall be in the bumper test area as defined in paragraph 3.10 [and shall be a minimum of 132 mm apart. The minimum distance is to be set with a flexible tape held tautly along the outer surface of the vehicle]. The positions tested shall be indicated in the test report.

Justification:

EEVC WG10 stressed in its report (chapter 4.2) that the (lower) legform test procedure allows the evaluation of bumper heights of up to 500 mm. Experts therefore clearly recognized the limitations of the (lower) legform test and also recognized the need of an alternative test for vehicles with high bumpers.

EEVC WG17 Report, Paragraph 7.2.1:

“Some vehicles, like off-road vehicles, have high bumpers for certain functional reasons. These high bumpers will impact the femur part of the legform impactor, where no acceleration is measured to assess the risk of fractures. Moreover, there is often no structure below the bumper to restrain the tibia part of the legform, for instance because an off-road vehicle needs a certain ramp angle and ground clearance [62]. Therefore WG17 decided to include an optional, alternative horizontal upper legform test with an impact speed of 40 km/h, when the lower bumper height is more than 500 mm above the ground.”

The difficulties for Industry arise from the introduction of a lower bumper reference line definition during the activities of WG17 which kept the 500 mm value mentioned in the WG10 report as the upper limit of applicability. However, the upper limit of applicability mentioned in the WG10 report was the upper bumper reference line.

Investigations conducted with vehicles with off-road capabilities have shown that some of these vehicles have lower bumper heights between 400 and 500 mm.

In addition, the US and Canadian bumper regulations in part 581 prescribe the bumper height to be in a range of 16" to 20" (406 mm to 508 mm) for limitation of low speed collision damages. This is also beneficial for vehicle to vehicle crash compatibility.

Given the above pedestrian protection and vehicle compatibility reasons, and considering that the counter measures – addition of energy absorbing material in front of the structure - to comply with either the (lower) legform or the upper legform to bumper test are comparable, the Industry suggests the following compromise:

Maintain the definition of the lower bumper reference line and permit the optional use of either the (lower) legform or the upper legform impactor for vehicles with lower bumper heights between 400 and 500 mm.