Effect of Enlarged Exterior Mirrors on Driver‘s Direct Vision

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Field of vision in Class III exterior mirror on passenger’s side
(ECE-R 46.01 vs. ECE-R 46.02 for passenger cars)

ECE-R 46.01:

ECE-R 46.02 (requirements on passenger’s side define mirror)
If the current Mercedes-Benz C-Class needed to comply with ECE-R 46.02, the exterior mirrors would have to increase vertically by approx. 30%:
Reduction of driver’s direct vision: Scenario

- Vehicle is turning left, 3 year old child on tricycle plans to cross the road:
Reduction of driver’s direct vision: Effect

- Vision on the child for a small driver (i.e. low position of eyes):

  R46.01 mirror:

  R46.02 mirror:
Further disadvantages of enlarged mirrors

- The higher upper edges of the exterior mirrors cause air turbulences at a level of the side windows, which is used for looking on the mirrors. That means, that bad weather conditions cause greater pollution of the side windows at levels which are relevant for active safety.

- The wind noise becomes louder. This disturbs and fatigues the driver on long distances.

- The greater exterior mirrors worsen the aerodynamic resistance of the vehicle via drag coefficient and increase of frontal area. This causes slightly higher fuel consumption.
Rearward visibility according to working group proposal TRANS/WP.29/GRSG/2004/10/Rev.1

Vision in passenger side exterior mirror:

- „Worst case“ adjustment of mirror (only upper edge of obstacle is visible)
- Sufficient vision on child, sufficient vision on rearward area
- Larger mirror yields no benefit for safety in real life
Simulation movie: Scenario

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Simulation movie: Vehicle‘s drive
Simulation movie: Vehicle‘s drive – step by step