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Effect of Enlarged Exterior Mirrors on Driver‘s Direct Vision

Martin Kulms, DaimlerChrysler AG
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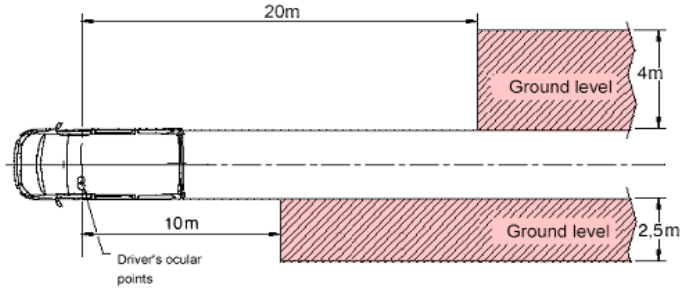
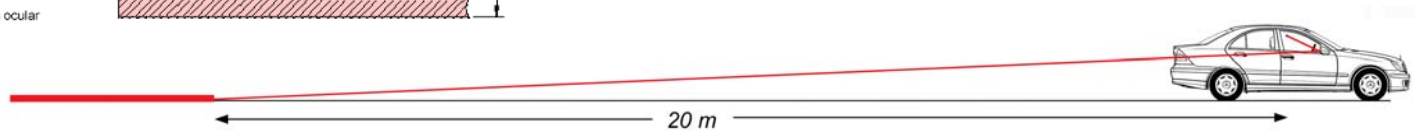
Field of vision in Class III exterior mirror on passenger‘s side (ECE-R 46.01 vs. ECE-R 46.02 for passenger cars)

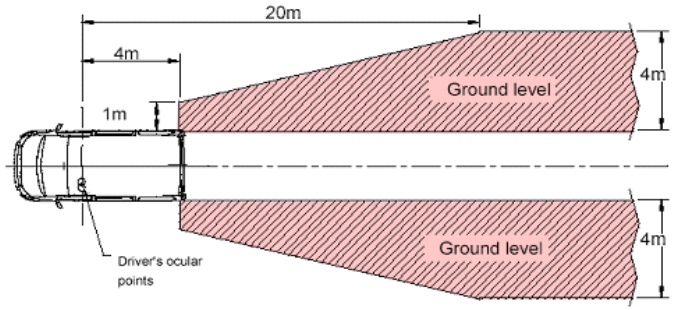
ECE-R 46.01:



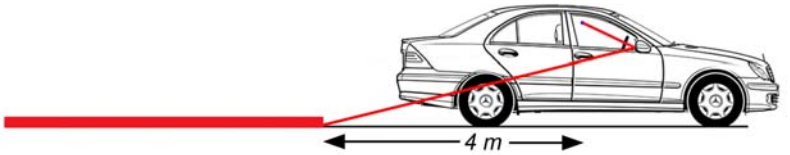
Side view (passenger‘s side):



ECE-R 46.02 (requirements on passenger‘s side define mirror



Side view (passenger‘s side):



Appearance of the mirrors

- 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):

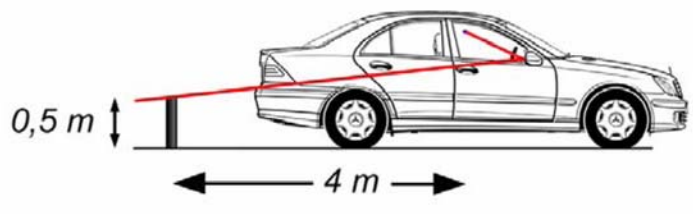
R46.01 mirror:

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

Simulation movie: Vehicle‘s drive

Simulation movie: Vehicle‘s drive – step by step