Head Restraint GTR
Status to AC.3

141th Session of WP.29
March 2007
Status of GTR

Two Major Issues

★ Backset
★ Active Head Restraints
Status of GTR

**Backset Limit**

★ **Backset Measurement Method**
  – Discussion originally on whether to use R-point or H-point for measurement
  – Draft GTR now allows for measurement from either R-point or H-point

★ **OICA is conducting testing to validate revised R-point test procedure proposed at Dec 2006 meeting.**
  – Results are due before May 2007 GRSP meeting.
  – Data will compare backset measurement determined using the H-point method and the R-point method.

★ **US will calculate equivalent backset limits for the two methods.**
Expected Results

Based on prior research, the US expects the R-point equivalent backset limit to be 10-15 mm less than the H-point backset.

- Current OICA method is similar to their method proposed in Sept 2006
  - 10 seats measured and the average R-point backset was 15 mm less than the H-point backset.
- In Sept 2006, Japan MLIT proposed a similar measurement method, which is very close to the current OICA measurement method.
  - 3 seats measured and the average R-point backset was approximately 15 mm less than the H-point backset.
Whiplash Injuries Benefits

★ World-wide Whiplash Injuries in Rear Impact Crashes
  – USA: 272,464
  – Japan: 309,939
  – Korea: 260,000
  – EC15: ~340,000

★ Number of whiplash injuries is similar among ’98 Agreement Contracting Parties, so expect the benefits gained to be similar.
Benefit Studies

★ US study found that benefits to front seat occupants result from smaller backset, and benefits to rear seat occupants result from higher head restraints.
★ US provided a benefit study that correlates the backset limit to whiplash injuries.
  - Benefits are based on improving the current situation in the U.S. fleet.
  - The current U.S. fleet average is 70 mm at the manufacturers seat back design angle.
  - A backset limit of 70 mm using the H-point will yield zero benefits in the US.
Backset Limit & Benefits

H-point value adjusted for seat back angle measured at manufacturers design angle

**Offset between R-point and H-point assumed to be 15 mm.

R-point Backset (mm)**

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<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
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<tr>
<td>R-point Backset (mm)**</td>
<td></td>
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Whiplash Injuries Prevented due to Backset only

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</thead>
<tbody>
<tr>
<td>R-point Backset (mm)**</td>
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Current US requirement

Draft GTR limit
**Cost of Increasing Backset Limit**

*Seat back angle set at manufacturers design angle*
Discussion

Backset

- Increasing the backset limit from 55 to 65 mm produces
  - 75% drop in benefits and
  - 80% increase in cost per equivalent life saved.
- The US is the only country that currently has a regulation on backset, which takes effect in September 2008.
- The issue is whether the GTR will also have a backset limit
- If so, will that backset limit be set at a level that produces benefits by reducing whiplash injuries?
Status of GTR

Active Head Restraints

- While active head restraints may accomplish the same level of whiplash protection, they may not meet the static requirements.
- Many active head restraints are being installed in vehicles.
- U.S. has an optional dynamic test to continue to encourage the introduction of these advanced systems while ensuring comparable whiplash protection.
- Many participants have expressed concerns about the dynamic option primarily the test dummy.
  - More long term research needs to be done to assess alternative test dummies.
  - Option under discussion is requiring less stringent backset requirements for active restraints.
Discussion

Active Head Restraints

★ US approach tests active head restraints in a simulated crash – no backset is needed to ensure benefits, since dynamic test checks performance

★ Until a better dummy is developed, this assures that occupants of seats with active head restraints are protected.

★ Approach of providing less stringent backset for active head restraints assumes occupant protection, without actually checking the protection provided

★ Less stringent backset means much less protection if the active head restraint does not actually work
Decisions to be Made by AC.3

- GRSP to forward draft regulation with brackets around non-agreed requirements for the June WP.29 2007 meeting.

- AC.3 to Decide in June
  - **Backset limits:** GTR allows either R-point measurement method or H-point measurement method. However, there is no consensus on backset limit
    - U.S. position: H-point backset limit at 55 mm; equivalent R-point at 40-45 mm
    - Other positions: H-point backset limit at 70 mm; equivalent R-point is 55 mm
  - **Active head restraints:**
    - U.S position: Use the U.S. dynamic test as an interim measure and work toward a better dynamic test and dummy
    - Other positions: allow less stringent requirements until better dynamic test and dummy are available

- If AC.3 cannot reach consensus in June, terminate current GTR efforts for static whiplash related requirements.