Detachable head restraint

- Requirement:
  Head restraint parts situated in zone 1 (red) or 2 (orange) must meet radius requirements from the front
Detachable head restraint

- Which head restraint parts are taken?

-> Application:
Only head restraint fixations and inserts are used to verify the radius from the front (parts over 50 Shore A)
Integrated head restraints

- Head restraint parts situated in zone 1 (red) or 2 (orange) must meet radius requirements from the front

-> **Problem**: it is not clear which parts of the seat are part of the integral head restraint
Integrated head restraints

- **Problem**: what is a part of the integral head restraint?

- The seat structure parts did not change, only the foam volume was altered -> therefore the area where the radius are checked shall not differ significantly from seats with detachable head restraints.

Comparison with parts verified with detachable head restraints.
Integrated head restraints

- **Problem**: what is a part of the integral head restraint?
- **Alternative 1**: definition of GTR 7: any seat trim over 700mm and within +/- 85mm

This area is smaller than the area of detachable head restraints and therefore not appropriate.
Integrated head restraints

- Problem: what is a part of the integral head restraint?
- Alternative 2: any part over 540mm (mentioned for gap and luggage crash test application)

This area would define that plastic covers and the whole width of the seat structure is a head restraint

-> no need to have a bigger area than normal head restraints
Integrated head restraints

- **Problem**: what is a part of the integral head restraint?
- **Alternative 3**: compromise of 1 and 2:
  for integral head restraints the limit is a line at 540mm perpendicular to the torso line within +/- 85mm.
Conclusion

Alternative 3 is the best compromise to define the area where radius apply from the front to integrated head restraints and which avoids to penalize such restraints.