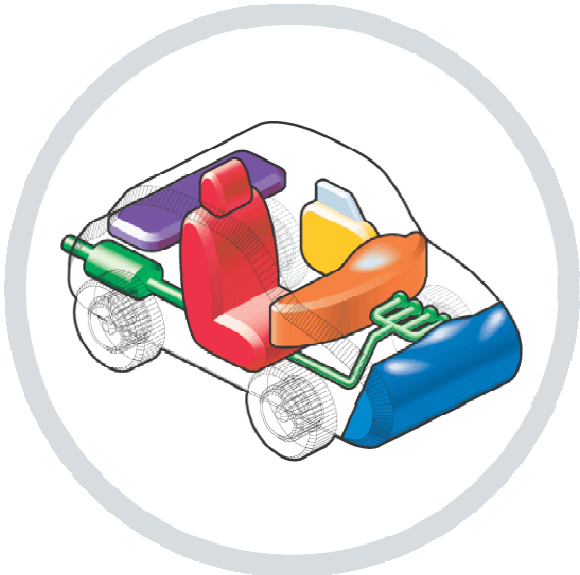
faurecia

Technical perfection, automotive passion.

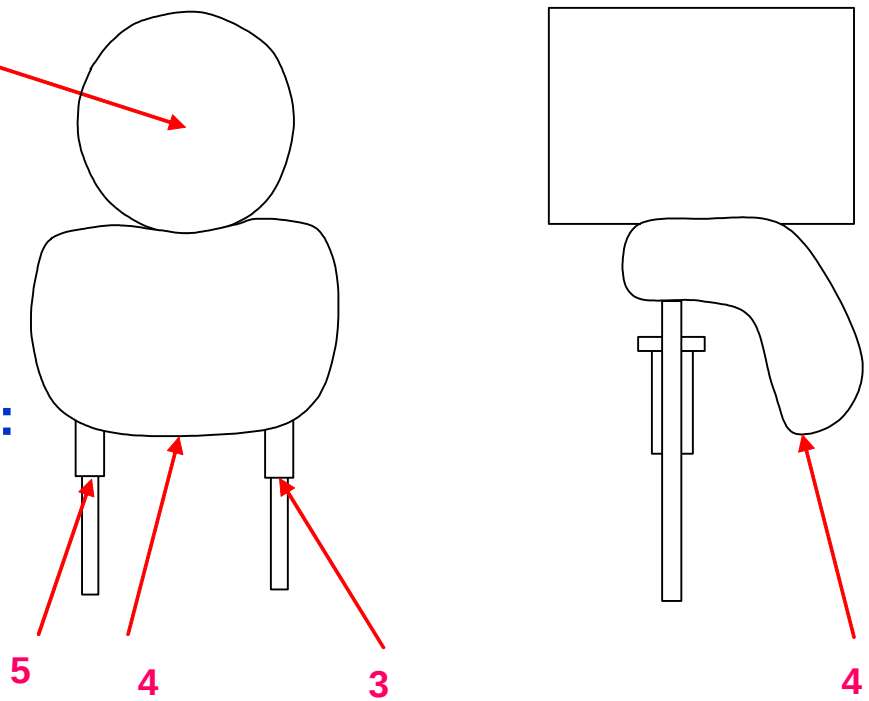
GTR HR

Height Retention



Try-out of alternative Height retention test

- Goal : Height retention test with alternative test protocol to minimize the influence of foam hysteresis and foam recovery
- Test scenario : Test as actually proposed within FMVSS 202a
- Measurement points :



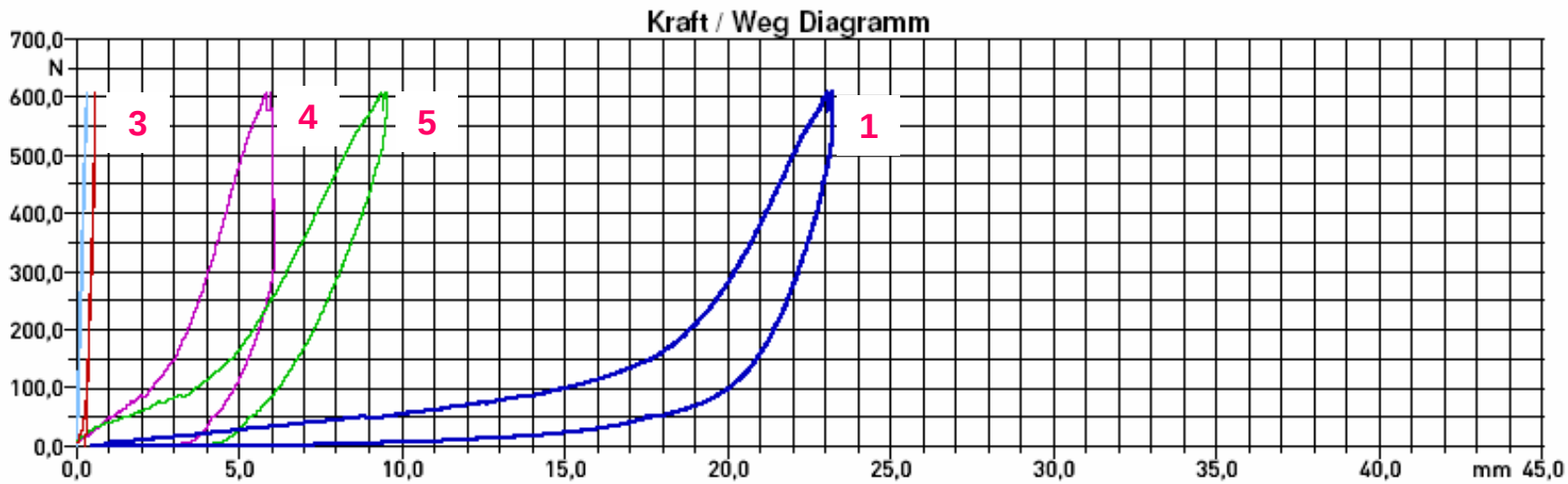
1 : cylinder displacement

3 : locked side of insert

5 : unlocked side of insert

4 : lowest part of head restraint trim

Test results : head restraint 1

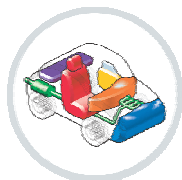


1 : cylinder displacement (top of head restraint)

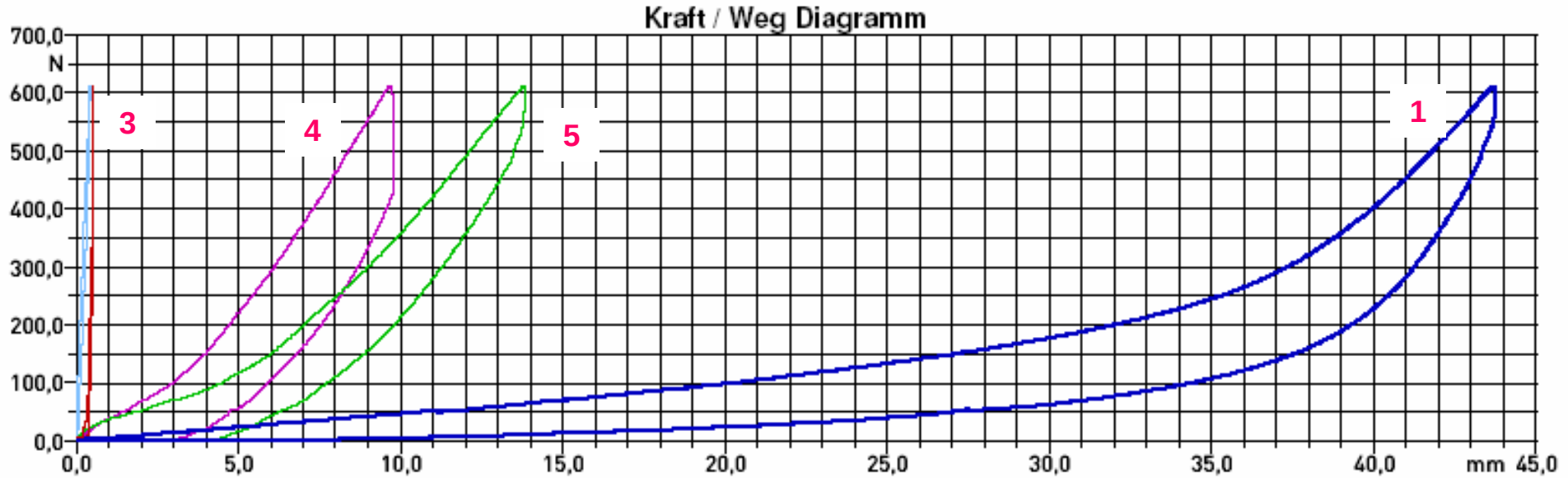
3 : locked side of insert

5 : unlocked side of insert

4 : lowest part of head restraint trim



Test results : head restraint 2

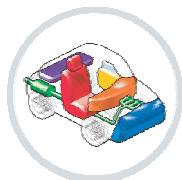


1 : cylinder displacement

3 : locked side of insert

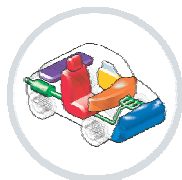
5 : unlocked side of insert

4 : lowest part of head restraint trim



Test results : head restraints 1+2 (fixed head restraints)

	GTR proposal	Head restraint 1	Head restraint 2
Displacement under 50N (top of H/R - 1)	25 mm	8,8mm	10,7 mm
Displacement difference before – after Fmax=600N at 50 N (top of H/R - 1)	13 mm	9 mm	16,4 mm
Displacement under 50N (bottom of H/R - 4)		1,1mm	1,4 mm
Displacement difference before – after Fmax=600N at 50 N (bottom of H/R - 4)		4 mm	4,8 mm



Conclusions

- ➔ Height retention
  - Both head restraints have no failure within the head restraint and similar displacements of the bottom of the head restraint (4mm and 4.8mm), but one of the head restraint would fail to GTR requirements (16.7mm of displacement at the top instead of 13mm).
  - The 13mm difference required at the top of the head restraint is not a good indicator for showing internal head restraint failures. This indicator shows mainly foam characteristics.
  - Standard head restraints will fail the height retention requirement without any failure of the head restraint mechanism.
- ➔ Better criteria : measurement at the bottom of the head restraint.