



INTERNATIONAL ORGANIZATION OF MOTOR VEHICLE MANUFACTURERS

Lower/Upper Bumper Reference Line

Data on existing vehicles

11 January 06

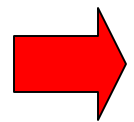
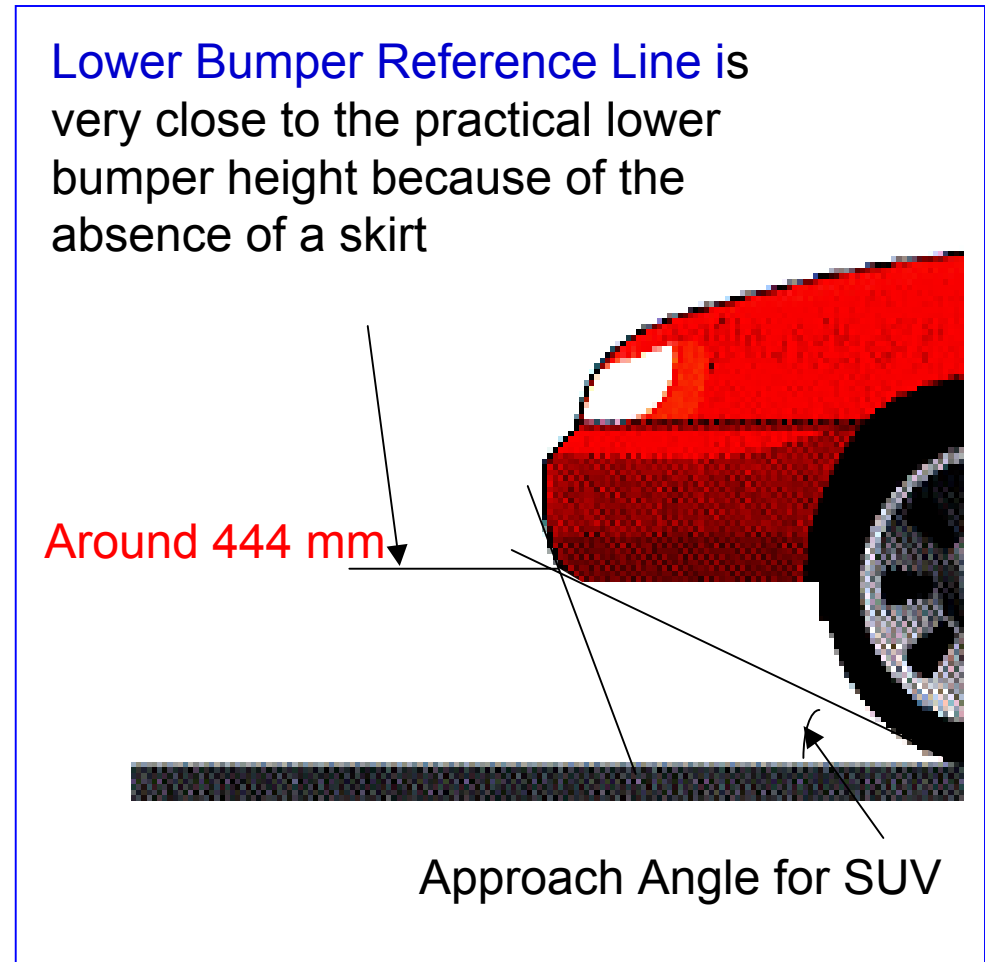
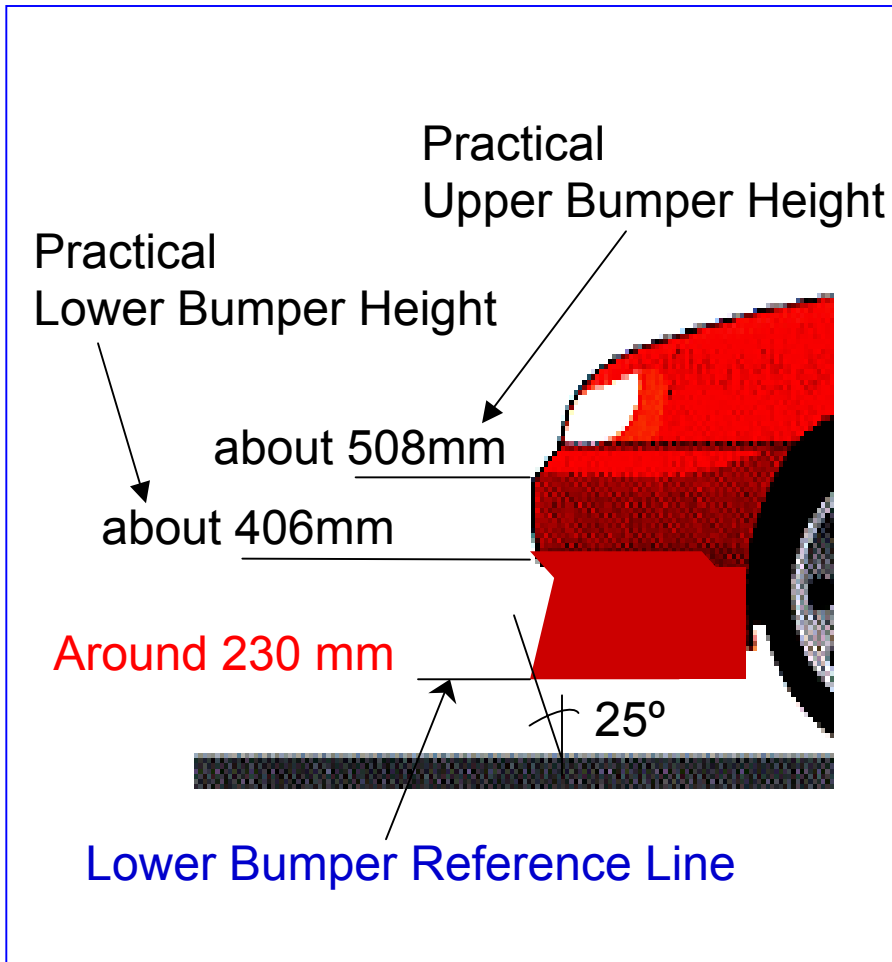
Pedestrian Safety GRSP Informal
Group - January 06



Introduction

Typical Passenger Car

Typical SUV



SUV's practical bumper height is aligned to that of passenger car for compatibility.

11 January 06

Pedestrian Safety GRSP Informal
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Car	Type	LBRL (mm)	UBRL (mm)
1	Sport	210	n.a
2	Sport	210	n.a
3	SUV	466	n.a
4	Large SUV	497	730
5	Large SUV	485	712
6	Large SUV	440	618
7	Medium SUV	420	685
8	Medium SUV	458	648
9	Small SUV	391	669
10	Small SUV	500	608
11	Small SUV	340	633
12	Large MPV	274	570



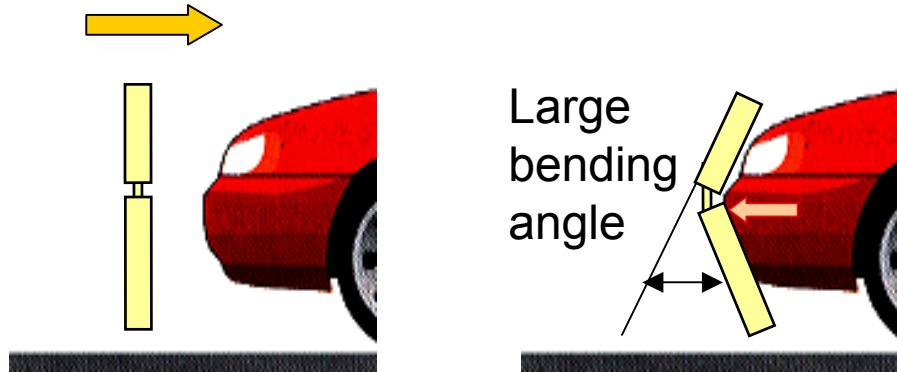
Car	Type	LBRL (mm)	UBRL (mm)
13	Large Family	235	469
14	Large Family	228	487
15	Large Family	237	586
16	Small Family	236	522
17	Small Family	224	493
18	Mini	225	514
19	Mini	214	509

Average SUV: 444 mm

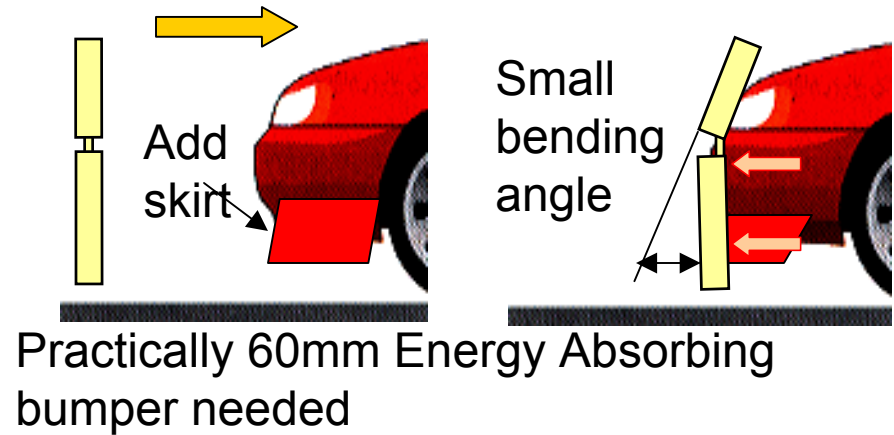
Average other: 230 mm

Counter measures for Lower Leg Requirements

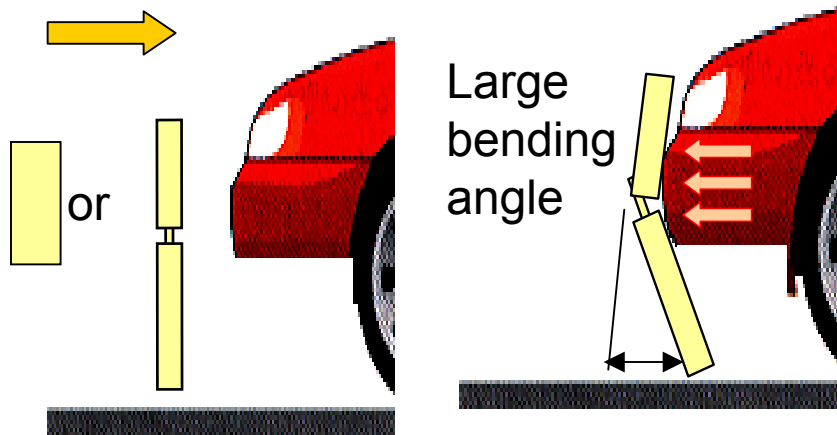
Typical Current Passenger Car



Improved car



Typical SUV



High bumper test requirement

@ Max. Load 7.5KN

@Max. Bending Moment 510Nm

Practically 120mm Energy Absorbing bumper needed

Typical passenger cars can meet the angle requirement, because they can have lower load path at the skirt. However, SUV cannot have such lower load path and have difficulties to meet the angle requirement.



Conclusions

- SUV, because of their basic design, cannot include a lower load path for the lower leg test
- SUV therefore need the option of the upper leg bumper test
- Typical Lower Bumper Reference Line for SUV start at 340 mm up to 500 mm
- Starting such option at LBRL > 500 mm would therefore solve the problems for only a very small number of vehicles, if any !