

# **GTR Head restraints**

## Height of head restraint

### Impact of increased height threshold of head restraints

**BMW Group**



# GTR Head Restraints

## Impact of increased head restraint height

### Background

- NL-Proposal:  
to increase the required head restraint height in future GTR from 800 mm to 850 mm above SRP for front seating positions.
- FMVSS 202a requires height (S4.2.6) and backset (S4.2.7) retention
- ECE-R 17 requires automatically operating locking systems for every adjustment and displacement system (5.1.1)

# GTR Head Restraints

## Impact of increased head restraint height

### Description of concern

- For ingress and egress to the rear seats in a 2-door vehicle it is necessary to actuate the entry system of the front seats;  
(fold forward the seat back; easy-entry systems)
- safety concern:  
the collision of a higher head restraint with the vehicle interior could restrict/bar the actuation of the entry system und such seriously compromise the evacuation/rescue of rear seat occupants in emergency situations;

# GTR Head Restraints

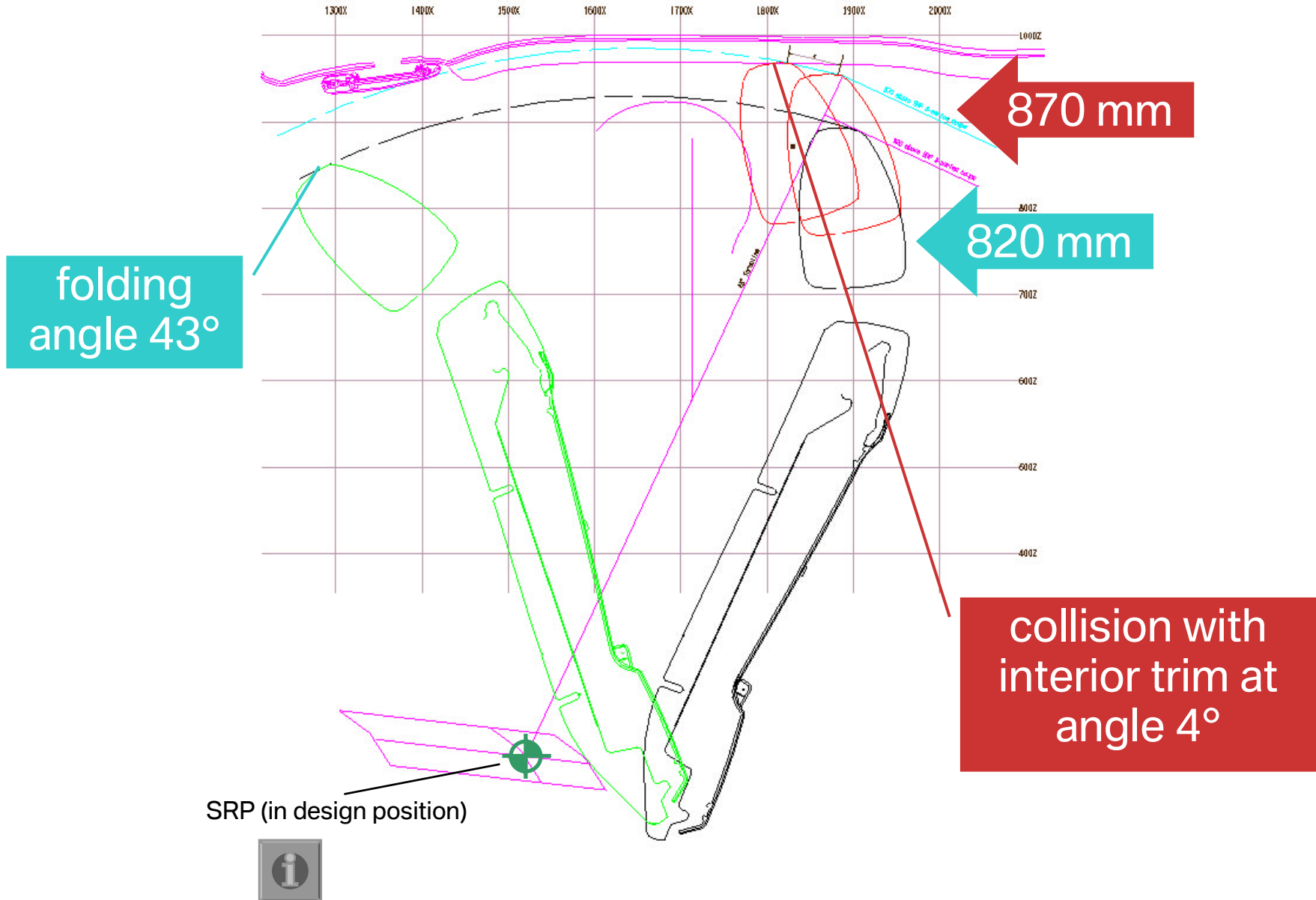
## Impact of increased head restraint height

### Vehicles affected

- Easy entry systems:  
during actuation of an easy entry systems the seat kinematics often results in an upward movement of the head restraint (e.g. also inclining seat rails)
- Vehicles with low roofline:  
head restraint will prevent the necessary folding of the seat back by collision with the vehicle roof (interior trim or sun visor);

# GTR Head Restraints

## Impact of increased head restraint height



# GTR Head Restraints

## Impact of increased head restraint height

Provisions in ECE-R17 and FMVSS 202a allow to reduce the maximum height of a head restraint

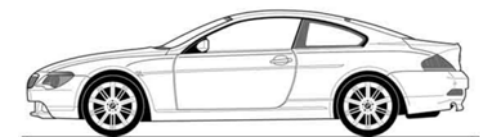
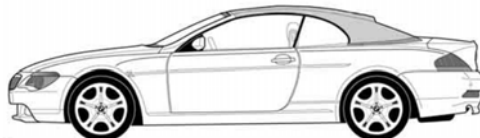
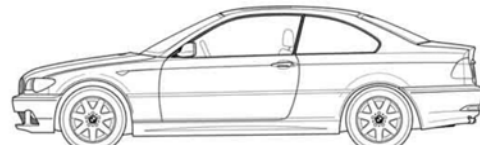
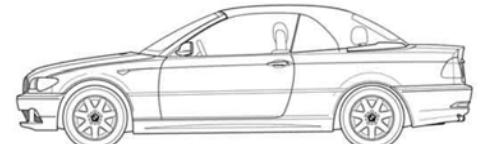
- for a maximum clearance of 25 mm the height of a head restraint may be reduced (minimum of 700 mm);
- clearance measured to roofline (FMVSS), windows and any part of vehicle structure (ECE only);
- measured in lowest vertical position intended for occupant use (FMVSS) or applicable to all seat positions (ECE);



# GTR Head Restraints

## Impact of increased head restraint height

### Low roof vehicles affected in BMW model range

6 ' series	Coupe	
	Convertible	
3 ' series	Coupe	
	Convertible	



# **GTR Head Restraints**

## **Impact of increased head restraint height**

End of presentation

Thank you for your attention

# GTR Head Restraints

## Impact of increased head restraint height

### Seat adjustment in design riding position according to ECE-R17:

- longitudinal adjustment in rearmost normal riding position (95% male);
- seat height adjustment in middle position;
- seat back adjustment according to 25° torso angle; (design angle of vehicle in presentation)
- head restraint height 820 mm and 870 mm (20 mm safety margin to threshold)



# GTR Head Restraints

## Impact of increased head restraint height

### Provisions in ECE-R17, 5.5.4 allowing a limitation of maximum height of head restraint

The dimensions mentioned in paragraphs 5.5.2 and 5.5.3.1 above **may be less than 800 mm in the case of front seats** and 750 mm in the case of other seats **to leave adequate clearance between the head restraint and the interior surface of the roof**, the windows or any part of the vehicle structure; however, the clearance shall **not exceed 25 mm**. In the case of seats fitted with displacement and/or adjustment systems, **this shall apply to all seat positions**. Furthermore, by derogation to paragraph 5.5.3.2 above, there shall not be any "use position" resulting in a height lower than 700 mm.



# GTR Head Restraints

## Impact of increased head restraint height

### Provisions in FMVSS 202a S4.2.1(a)(2) allowing a limitation of maximum height of head restraint

(2) Exception. The requirements of S4.2.1(a)(1) do not apply if the vehicle roofline physically prevents a head restraint, located in the front outboard designated seating position, from attaining the required height.

In those instances in which this head restraint cannot attain the required height, when measured in accordance with S5.2.1(a)(2), **the maximum vertical distance between the top of the head restraint and the roofline must not exceed 25 mm.**

Notwithstanding this exception, when measured in accordance with S5.2.1(a)(2), the top of a head restraint located in a front outboard designated seating position must have a height not less than 700 mm in the lowest position of adjustment.

