



**Economic and Social  
Council**

Distr.  
GENERAL

TRANS/WP.29/GRSP/2004/15  
17 September 2004

ENGLISH  
Original: ENGLISH  
ENGLISH AND FRENCH ONLY

---

**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Passive Safety (GRSP)

(Thirty-sixth session, 7-10 December 2004,  
agenda item A.4.)

**HEAD RESTRAINTS  
COMPARISON BETWEEN  
NORTH AMERICAN REGULATIONS (FMVSS 202 and FMVSS 202, NPRM)  
AND UNECE REGULATIONS Nos. 17 and 25**

Transmitted by the expert from the United States of America

Note: This document is distributed according to the request of GRSP (TRANS/WP.29/GRSP/35, para. 9).  
It is based on the text of informal document No. GRSP-34-17.

---

Note: This document is distributed to the Experts on Passive Safety only.

GE.04-23607

HEAD RESTRAINTS  
COMPARISON BETWEEN NORTH AMERICA REGULATIONS (FMVSS 202 and FMVSS 202, NPRM)  
AND UNECE REGULATIONS Nos. 17 and 25

Head Restraint Component	U.S. – FMVSS 202	US FMVSS 202 NPRM	UNECE Regulations Nos. 17 and 25	Comments
<b>A. Application</b>				
<i>1. Vehicles</i>				
Passenger cars, MPVs and trucks with a GVWR $\leq$ 4536 kg	Front outboard seating positions	All outboard seating positions	UNECE Regulation No. 17: Required in front outboard positions, optional in other positions, in vehicles with $\leq$ 9 seating positions (M1)	US required in all outboard vs UNECE that requires only front outboard, but if HR present in rear seat, UNECE regulates.
<i>2. Requirements</i>				
<b>a. Height</b>				
<i>1. Front outboard</i>				
A. Fixed	At least 700 mm above H-point as measured parallel to the torso reference line	Increased to 800mm	Same as NPRM	
B. Adjustable	Same as 202-fixed	Must achieve a height of 800 mm and cannot be adjusted below 750 mm.	Same as NPRM	
<i>2. Rear outboard</i>				
A. Fixed	Not specified	Minimum height of 750 mm above H-point	If HR available, same as NPRM	
B. Adjustable	Not specified	No adjustment below 750 mm	If HR available, same as NPRM	

Head Restraint Component	U.S. – FMVSS 202	US FMVSS 202 NPRM	UNECE Regulations Nos. 17 and 25	Comments
3. Rear Centre				
	Not specified	Not specified	If HR available, minimum height of 700 mm	
<b>b. Backset</b>				
1. All outboard positions	Not specified	Backset limited to a maximum 50 mm in any adjustment position as measured with HRMD.	Not specified.	
<b>c. Width</b>				
1. Front outboard	Minimum of 171 mm on single seats and 254 mm on bench seats	Same as 202	Minimum of 170 mm for all seat types	- 171/170 difference due to rounding - US requires wider HRs on bench seats.
2. Rear outboard	Not specified	Same as above	If HR available, minimum of 170 mm.	- 171/170 difference due to rounding
<b>d. Height of adjustable head restraint front surface</b>				
	Not specified	Not specified	Minimum height of 100 mm	
<b>e. Gaps</b>				
1. All outboard positions	Not specified	-In lowest position, gap between HR and seat back is ≤ 25mm, for a single backset adjustment. -In other positions, gap cannot exceed 60 mm -Both measured with a 165 mm diameter sphere placed in front of the HR.	- In lowest position, gap is ≤ 25, with no reference to backset adjustment. Measured along straight line between HR and seat back. - In other positions the gap ≤ 60 mm as measured with 165 mm dia. sphere, or must pass a load test.	

Head Restraint Component	U.S. – FMVSS 202	US FMVSS 202 NPRM	UNECE Regulations Nos. 17 and 25	Comments
<b>f. HR Adjustment Retention Devices (locks)</b>				
1. Height	Not specified	Must maintain height in several positions, including maximum and minimum, while a downward force is applied.	If adjustable, requires automatic locking system (UNECE Regulation No. 17, para. 5.1.1.). No downward test required.	UNECE has no downward testing requirement.
2. Backset	Not specified	Under applied rearward moment, while adjusted to 800mm for front and 750mm for rear, HR must maintain any position of backset adjustment.	Not specified.	
<b>g. Removability</b>				
1. Front	Not specified	Cannot be removed solely by hand (tools required)	Can be removed with deliberate action distinct from any act necessary for adjustment.	US proposed rule more specific (stringent).
2. Rear	Not specified	Can be removed by hand.	Same as above	
<b>h. Clearance</b>				
	Not specified	25 mm clear space allowed where rear HRs, when seat is occupied, interfere with roofline or rear window. Minimum seat height could be less than 700 mm.	If HR available, 25 mm clear space allowed where interference with vehicle structure. Seat does not need to be occupied. Minimum height of 700mm must be maintained.	Requiring a minimum height would force some vehicle manuf. to alter roofline. Not an issue in UNECE. If no HR, minimum height does not need to be met.

Head Restraint Component	U.S. – FMVSS 202	US FMVSS 202 NPRM	UNECE Regulations Nos. 17 and 25	Comments
<b>i. Non-use positions</b>				
1. Front	Not specified	Not allowed	Allowed, provided HR automatically returns to proper position when seat is occupied.	
2. Rear	Not specified	Allowed, provided HR automatically returns to proper position when seat is occupied or non-use position changes torso angle by 10° as measured with H-point device.	Allowed as long as non-use position is “clearly recognizable to the occupant”.	US proposed rule more stringent. Only allows HRs that can fold forward or are automatic.
<b>j. Radius of curvature</b>				
	Not specified	Any part of the HR outside of the impact zone for the energy absorption requirement must not have a radius smaller than 5mm.	Same as NPRM. Refers to the back of the head restraint.	202 does not apply to the back of the head restraint.
<b>k. Energy absorption</b>				
	Not specified	Front of HR impacted with head form at v=24.1 km/h. 3ms deceleration of head form must not exceed 80gs . Impactor is free motion head form with mass of 6.8 kg.	Similar to NPRM: Uses pendulum impactor with same weight and velocity as linear impactor.	Results should be the same.

Head Restraint Component	U.S. – FMVSS 202	US FMVSS 202 NPRM	UNECE Regulations Nos. 17 and 25	Comments
<b>l. Displacement test procedures</b>				
	Load is applied to back pan of seat, load is applied to head restraint after seat load is removed. 102 mm of displacement allowed with 373 Nm moment. Load is increased until 890N or seat back fails. Use spherical or cylindrical form to apply load.	Test procedure modified from 202. Seat back and HR loaded together. Moments and displacements same. Maximum load the same, seat back cannot fail. Use spherical form to apply load	Same as NPRM	
<b>m. Dynamic sled test</b>				
	Seat accelerated so the pulse falls in a corridor defined by 2-½ sine waves with amplitudes of 78 m/s <sup>2</sup> and 86 m/s <sup>2</sup> . Corridor cannot be met. 95th male dummy used, max rotation 45°.	New corridor based on scaled version 208 sled test. Target pulse the same as 202. Tested with 50th and 95th male dummy. 50th max rotation 12° w/HR in min position. 95th max rotation 20° w/HR in min position.	Not specified	