



***JAPAN's Comments on
Backset Requirements of
FMVSS 202aS
Final Rule***

GRSP INFORMAL WORKING GROUP ON HEAD RESTRAINTS

Rev.3: September '05

Rev. 2: July '05

Rev. 1: June '05

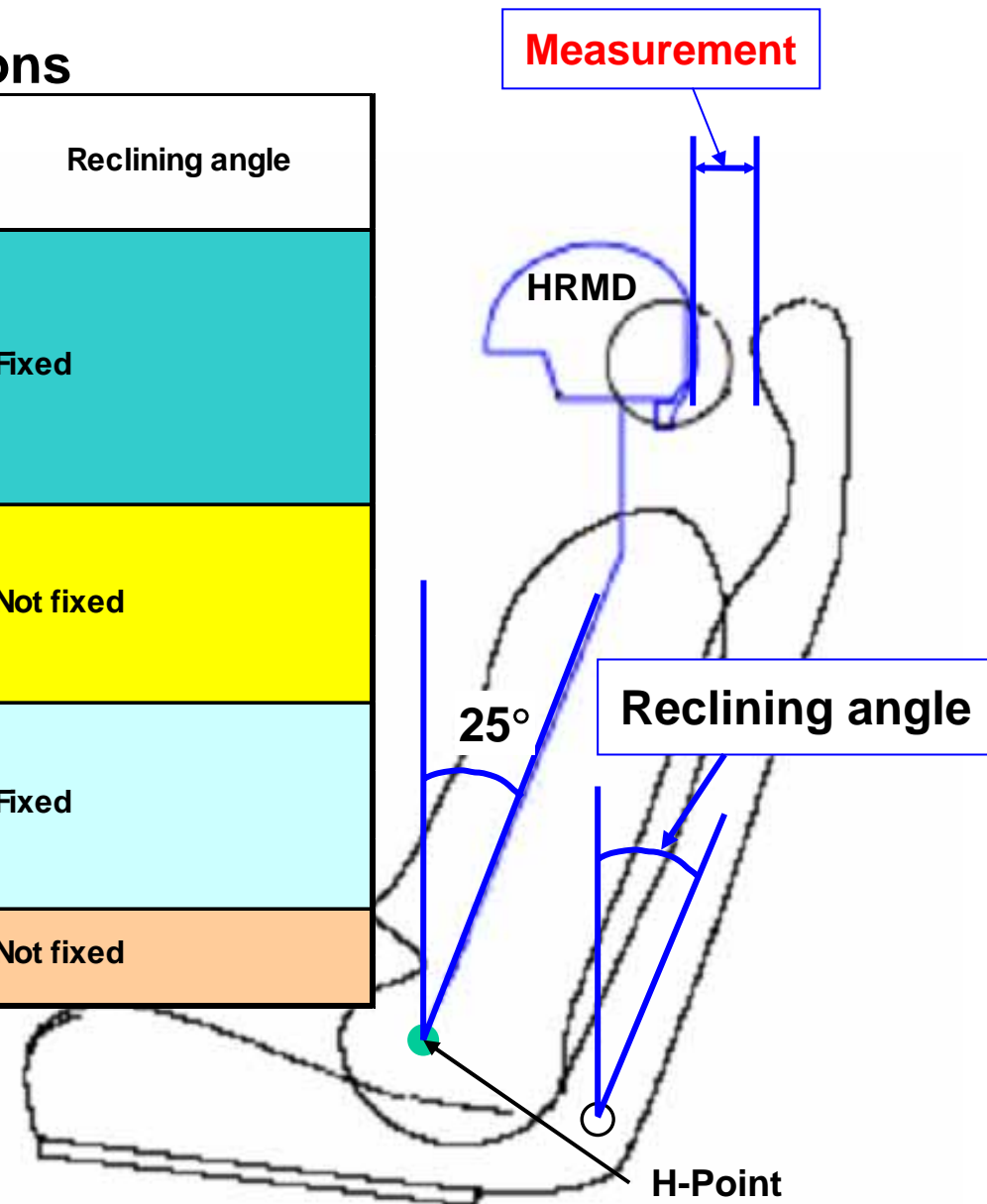
March '05

JAPAN MLIT

1. Study of Variations in Backset Measurements

(1) Method for studying variations

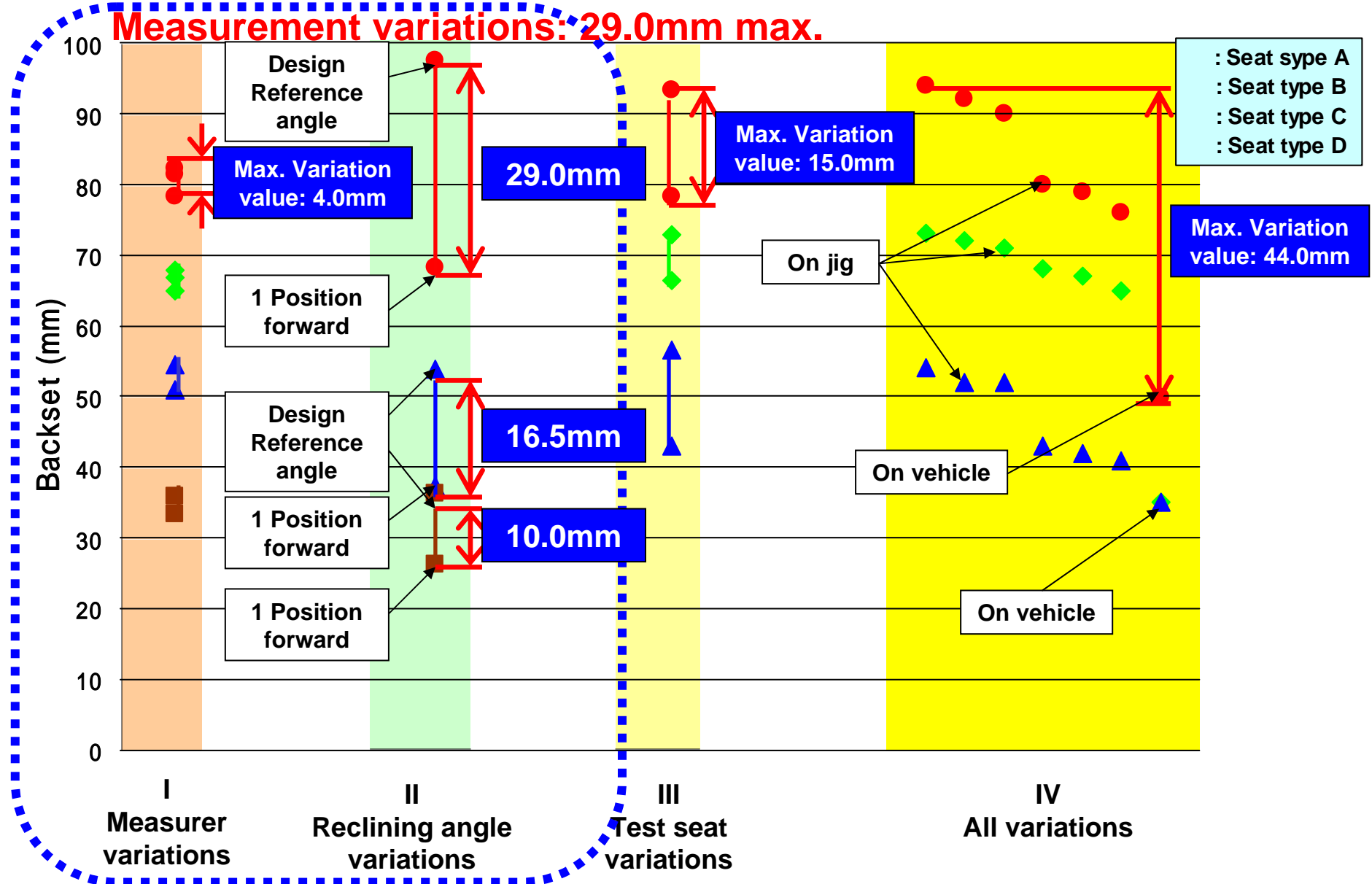
Case	Seat		No. of measur-ers	No. of measure-ments	Reclining angle
	Type	No.			
I Measurer variations	A	1	3	3	Fixed
	B	1	3	3	
	C	1	3	3	
	D	1	6	1 to 5	
II Reclining angle variations	B	1	3	1	Not fixed
	C	1	3	1	
	D	1	6	1 to 5	
III Test seat variations	A	3	1	3	Fixed
	B	3	1	3	
	C	3	1	3	
IV All variations	A	2	2	2	Not fixed
	C	2	2	2	



1. Study of Variations in Backset Measurements

Rev.2

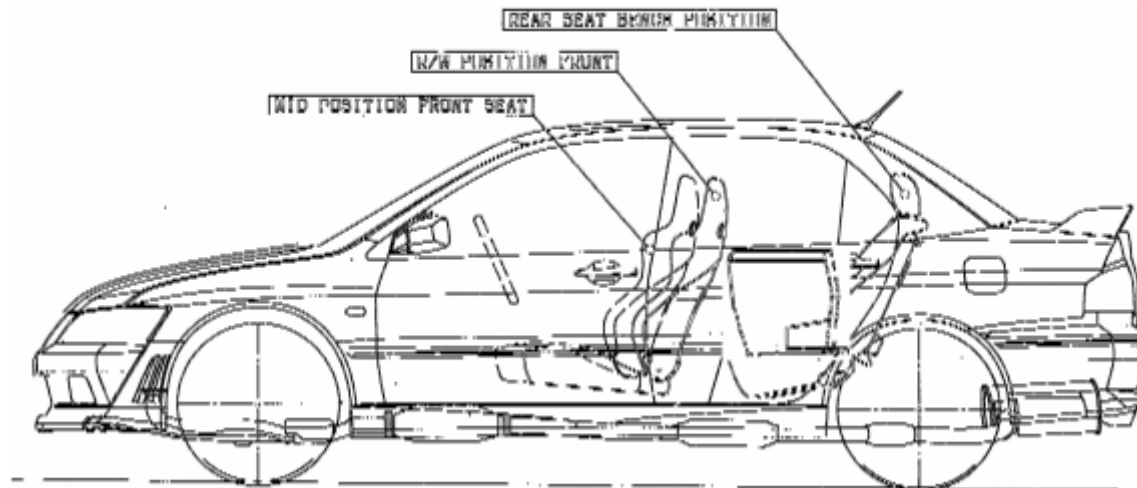
(2) Results of determining variations



1. Study of Variations in Backset Measurements

Rev.3

- (3) Vehicle posture variation also makes torso angle and Backset measurement variation, because the posture is not specified in FMVSS202.

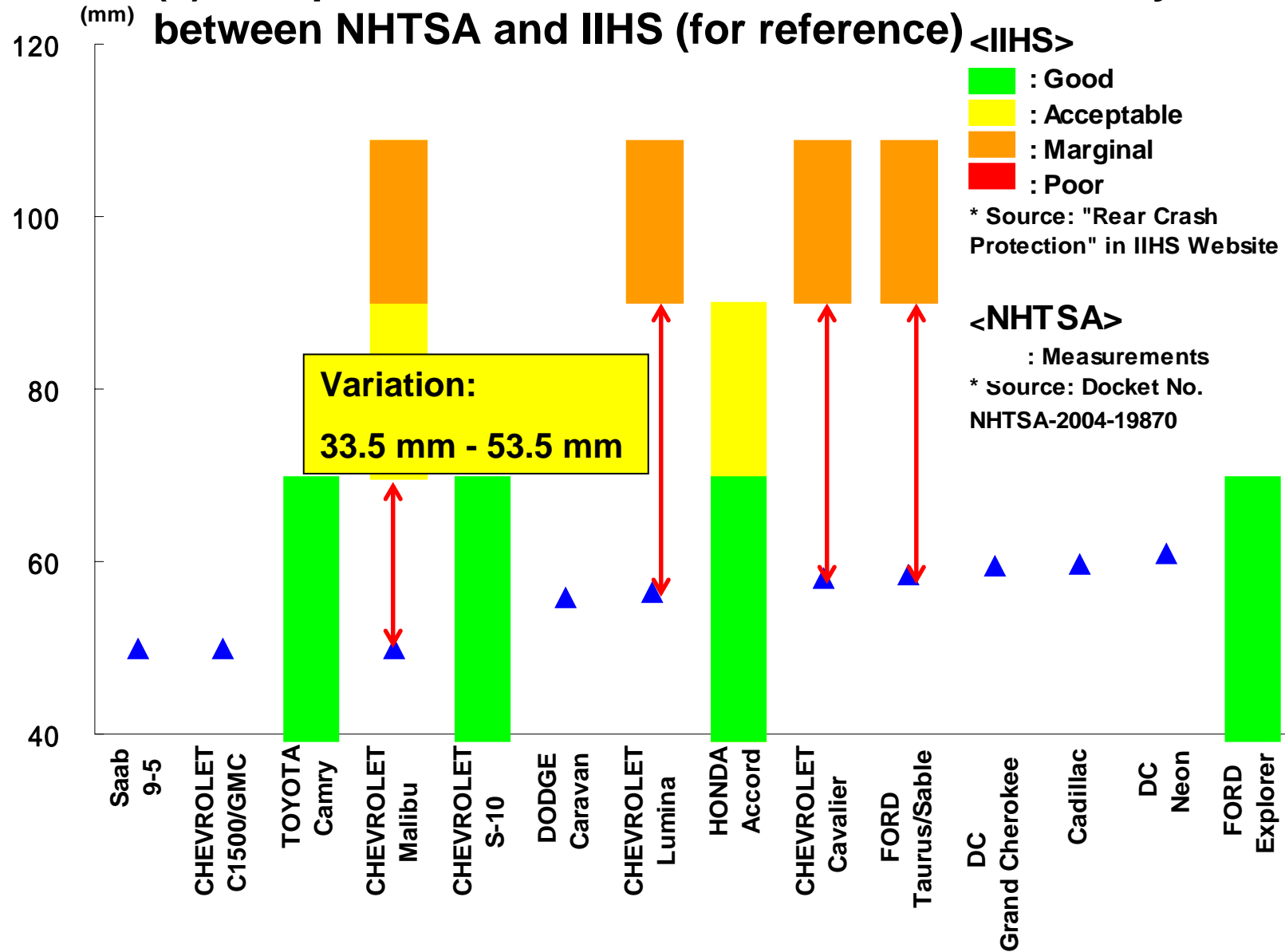


TP-202aS-00

For dimensional tests the vehicle may either be placed on a flat, level surface or the vehicle may be secured as required for the energy and impact tests.

1. Study of Variations in Backset Measurements

(4) Comparison of measurements for 1999 model year vehicles between NHTSA and IIHS (for reference) <IIHS>



1. Study of Variations in Backset Measurements

(5) Summary and Proposal

<Measurement variations>

A maximum variation of 29.0 mm occurred.

<Major factors in variations>

- Measurers variation: 4.0 mm max.
- **Reclining angles variation: 29.0 mm max.**

<Other variation>

Vehicle posture variation makes further variation.

Rev.3

Design reference position

Variation

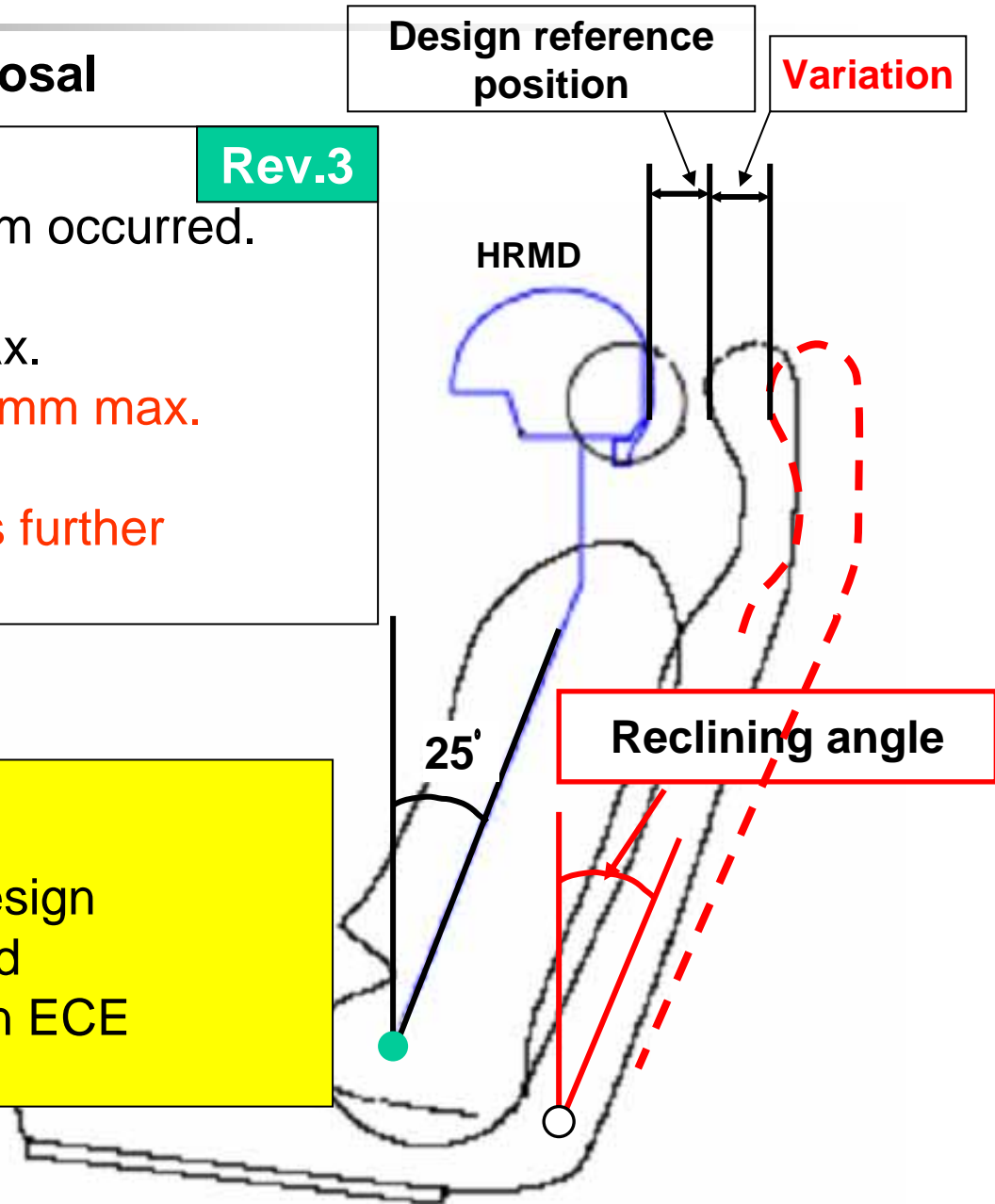
HRMD

25'

Reclining angle

<Proposal>

To measure backset at the design reference position (with a fixed reclining angle) as specified in ECE





2. Study of Backset Comfort Tolerances

Review of UMTRI report referenced by NHTSA

DATE: March 3, 2001

MEMO TO: National Highway Traffic Safety Administration

SUBJECT: Response to NPRM on FMVSS 202, Docket No. NHTSA-2000-8570

(1) UMTRI states that NHTSA's proposed backset requirements cannot ensure comfortable head positions and proposes that its measuring methodology be revised as well.

- NHTSA should revise the procedures by which head restraint height and fore-aft position are specified and measured to better reflect the effective head restraint positions experienced by the occupant population. An alternative procedure is outlined below.
- The proposed requirements for fore-aft head restraint position (backset) would result in interference with the preferred head positions of a substantial percentage of occupants. Larger backsets are required to accommodate drivers' and passengers' preferred head positions.
- The HRMD measures fore-aft restraint position at only one head height, and hence does not accurately measure the fore-aft restraint positions that would be experienced by occupants of different sizes. The HRMD also suffers from poor measurement precision, and cannot be used with the new H-point manikin that will soon replace the

2. Study of Backset Comfort Tolerances

(2) Regarding the figure referenced by NHTSA (shown below), UMTRI clearly states that a **hair margin of 25 mm** is needed.

If head restraints complying with the NPRM were added to current driver seats, the head restraints would interfere with about 13 percent of drivers preferred head positions. The head restraints would contact the hair of about 33 percent of drivers, assuming a median hair margin at the back of the head of 25 mm. Figure 3 shows the percentage of drivers

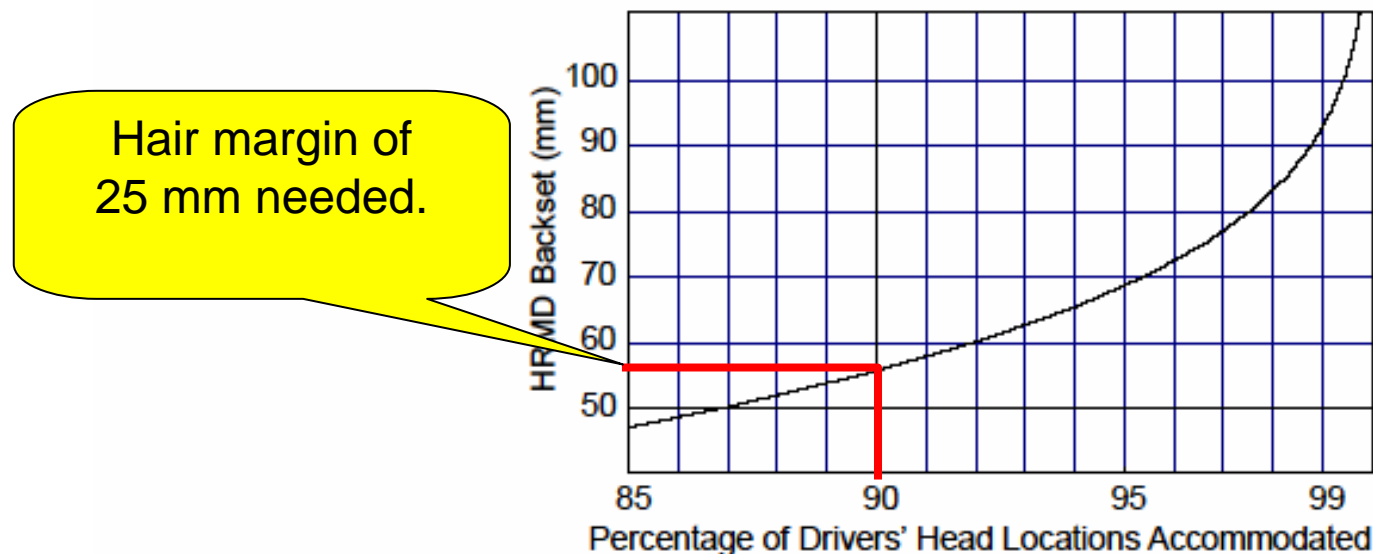


Figure 3. Percentage of drivers' head positions that do not intersect the head restraint for a range of HRMD-measured backsets and typical seat pivot locations. A head restraint front surface that is vertical and spans the range of driver vertical head locations at a seatback angle of 25 degrees is assumed.



2. Study of Backset Comfort Tolerances

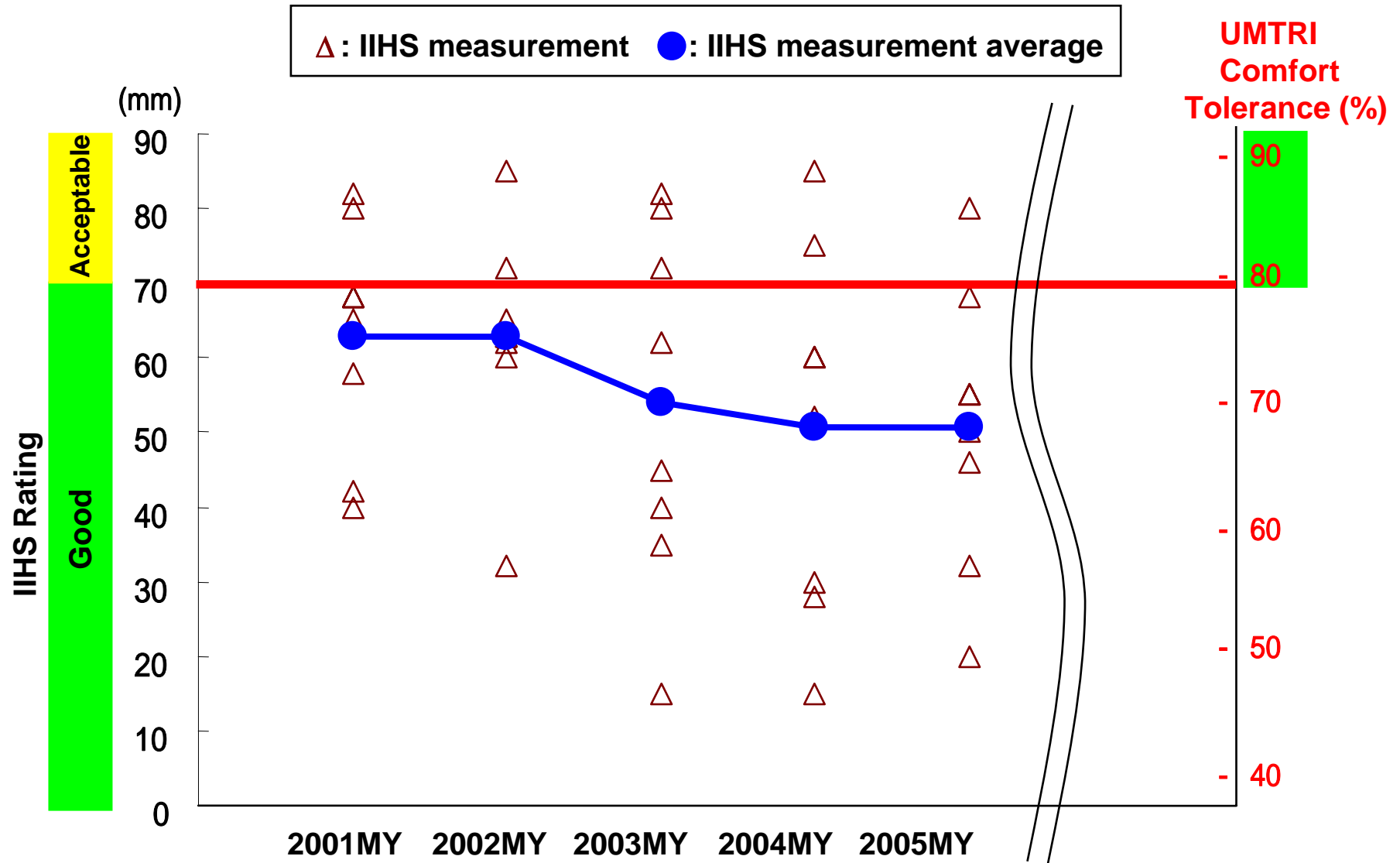
(3) UMTRI recommends a backset of **70 – 80 mm** with a view to ensuring the comfort.

distributed with a standard deviation of about 35 mm. When the covariance between fore-aft head position and driver-selected seatback angle is included, the standard deviation of driver head-to-head restraint backset for head restraints that move with the seatback is also about 35 mm. Hence, to avoid disaccommodating more than a small percentage of drivers, the mean driver backset must be at least twice the standard deviation, i.e., about 70 mm. (Note that mean driver backset is not the same as HRMD-measured backset, because the location of the HRMD with respect to the actual distribution of drivers' head locations is dependent on the seatback angle at which the HRMD is used.)

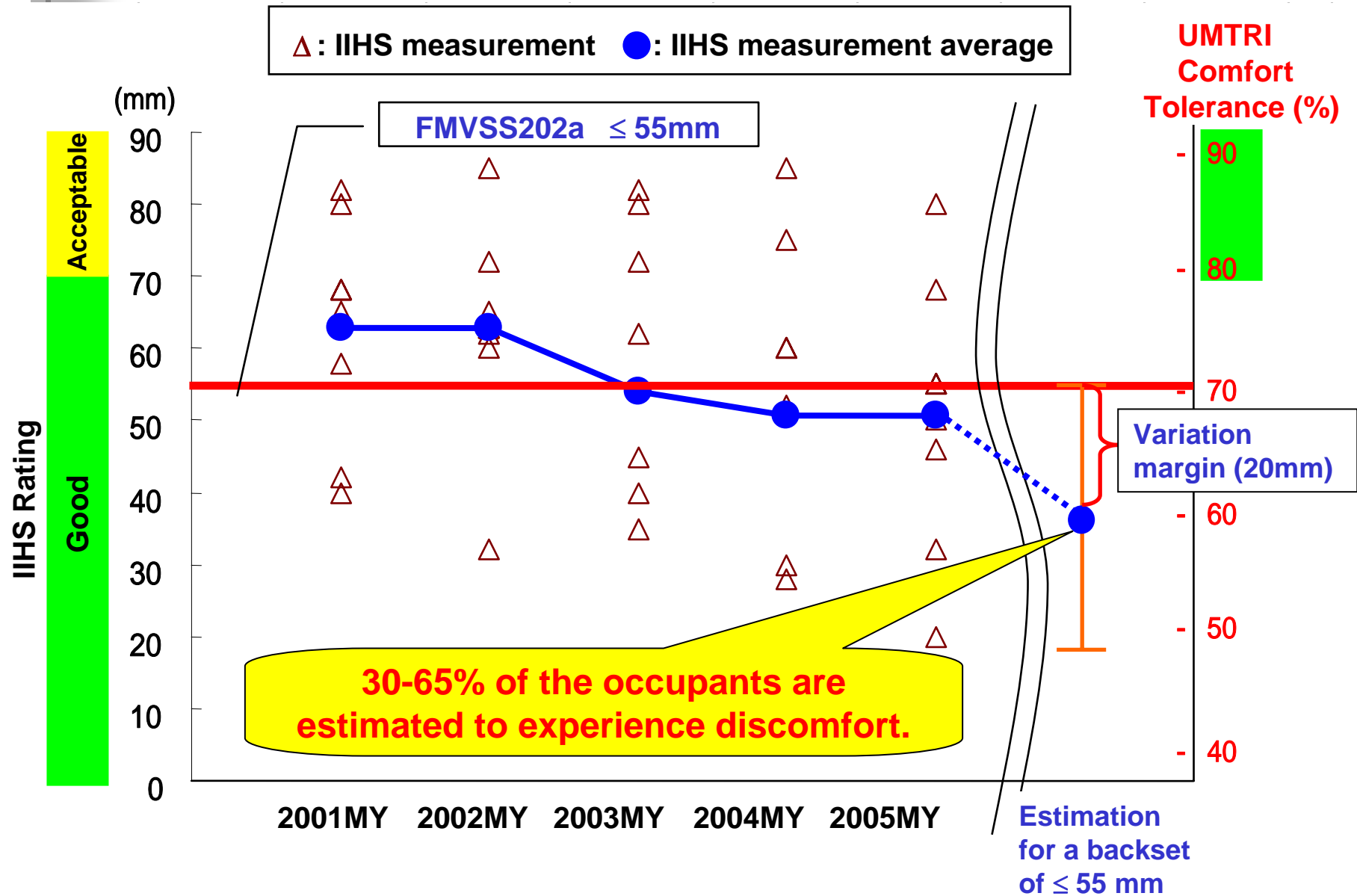
those seatback angles. Overly stringent backset requirements would necessitate changes to existing seatback designs but probably would not reduce mean driver backset below the level required for accommodation (70 to 80 mm), because manufacturers would design seats that increase the backset to avoid customer complaints (i.e., design seats that produce larger mean-selected seatback angles).

3. Relationship between IIHS Backset Measurements and Comfort Tolerances

Rev.1



3. Estimated Comfort Tolerance for a Backset of ≤ 55 mm





END