

# **Technical Requirements of UN-R 125 The Forward Field of Vision**

The 56<sup>th</sup> Asia Expert Meeting in Malaysia

Date: July 16<sup>th</sup> – 17<sup>th</sup> , 2019



**JAPAN AUTOMOBILE STANDARDS INTERNATIONALIZATION CENTER**

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## Regulation No. 125

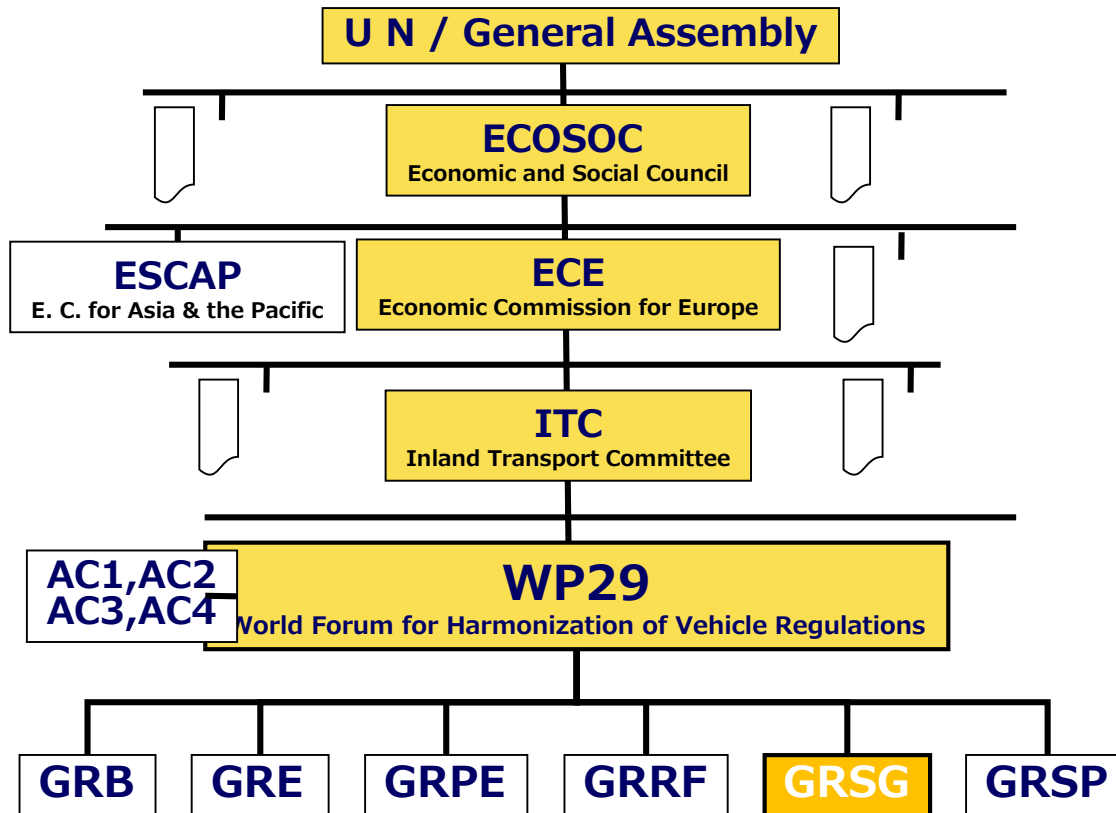
Uniform provisions concerning the approval of motor vehicles with regard to the forward field of vision of the motor vehicle driver

**To ensure an adequate field of vision when the windscreen and other glazed surfaces are dry and clean.**

This Regulation applies to category M1.



- R125 is discussing by UN/ECE/WP29/GRSG



## Experts from;

Belgium; Canada; Czech Republic; Finland; France; Germany; Hungary; India; Italy; Japan; Luxembourg; Netherlands; Norway; China; Poland; Korea; Russia; South Africa; Spain; Sweden; Switzerland; Thailand; UK; USA; EU

## Participation from NGO;

CLEPA, OICA; IMMA; IRU, CLCCR , Etc.











Latest version is **01 series of amendments + Supplement 1 to the 01 series of amendments**

1. Scope
2. Definitions for the purpose of this Regulation
3. Application for Approval
4. Specifications
5. Test procedure
6. Modification of vehicle type and extension of approval
7. Conformity of production
8. Penalties for non-conformity of production
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- 2. Arrangements of approval**
- 3. Procedure for determining the “H” point and the actual torso angle for seating positions in motor vehicles**
  - Appendix 1: Description of the three-dimensional "H" point machine (3-D H machine)
  - Appendix 2: Three-dimensional reference system
  - Appendix 3: Reference data concerning seating positions
- 4. Method for determining the dimensional relationships between the vehicle's primary reference marks and the three-dimensional reference grid**

# Vehicle Category

Category	Description	Example	
L	Motor vehicles with less than 4 wheels		
M	Power-driven vehicles having at least 4 wheels and used for the carriage of passengers		
N	Power-driven vehicles having at least 4 wheels and used for the carriage of goods		
O	Trailers (Including semitrailers)		
T	Agricultural and Forestry tractors		

## **This Regulation applies to:**

the 180° forward field of vision of drivers of category M1 vehicles.

### **UN Consolidated Resolution on the Construction of Vehicles (R.E.3)**

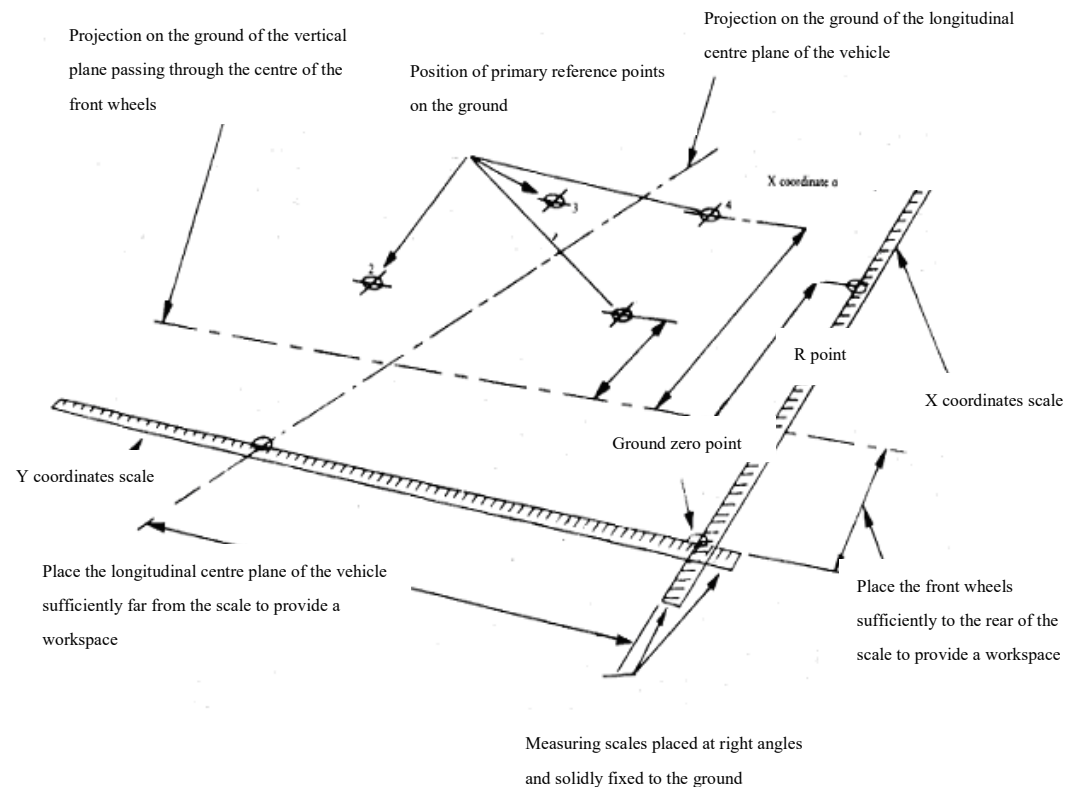
2.2. Category M - Power-driven vehicles having at least four wheels and used for the carriage of passengers

2.2.1. **"Category M1": Vehicles used for the carriage of passengers and comprising not more than eight seats in addition to the driver's seat.**



To understand this Regulation, Important Word are listed and defined.

2.3. **"Three dimensional reference grid"** means a reference system which consists of a vertical longitudinal plane X Z, a horizontal plane X Y and a vertical transverse plane Y Z (see Annex 4, Appendix, Figure 6); the grid is used to determine the dimensional relationships between the position of design points on drawings and their positions on the actual vehicle.



Annex 4 Figure 6  
Level work place

To understand this Regulation, Important Word are listed and defined.

2.5. "**Seat back angle**" means the angle defined in the revised Consolidated Resolution on the Construction of Vehicles (R.E.3) , Annex 1, paragraph 2.6. or 2.7.

\* Caution: "back angle" = "torso angle" in R.E.3.

2.8. "**V points**" means points whose position in the passenger compartment is determined as a function of vertical longitudinal planes passing through the centres of the outermost designated seating positions on the front seat and in relation to the "R" point and the design angle of the seat back, which points are used for verifying compliance with the field of vision requirements.

2.9. "**R point** or seating reference point" means the point defined in the revised R.E.3, Annex 1, paragraph 2.4.

2.10. "**H point**" means the point defined in the revised R.E.3, Annex 1, paragraph 2.3.

**UN Consolidated Resolution on the Construction of Vehicles (R.E.3)**  
has many common important definitions used in UN regulations.

# 3. Application for approval



3.1. The application for approval of a vehicle type with regard to the driver's field of vision shall be submitted by the vehicle manufacturer or by his authorized representative.

3.2. It shall be accompanied by the documents mentioned below in triplicate and include the following particulars:

3.2.1. A description of the vehicle type with regard to the items mentioned in paragraph 2.2. above, together with dimensional drawings and either a photograph or an exploded view of the passenger compartment. The numbers and/or symbols identifying the vehicle type shall be specified; and

3.2.2. Particulars of the primary reference marks in sufficient detail to enable them to be readily identified and the position of each in relation to the others and to the "R" point verified.

- # Annex 1
- ## Communication

## Annex 2

### Arrangements of approval marks

*12*

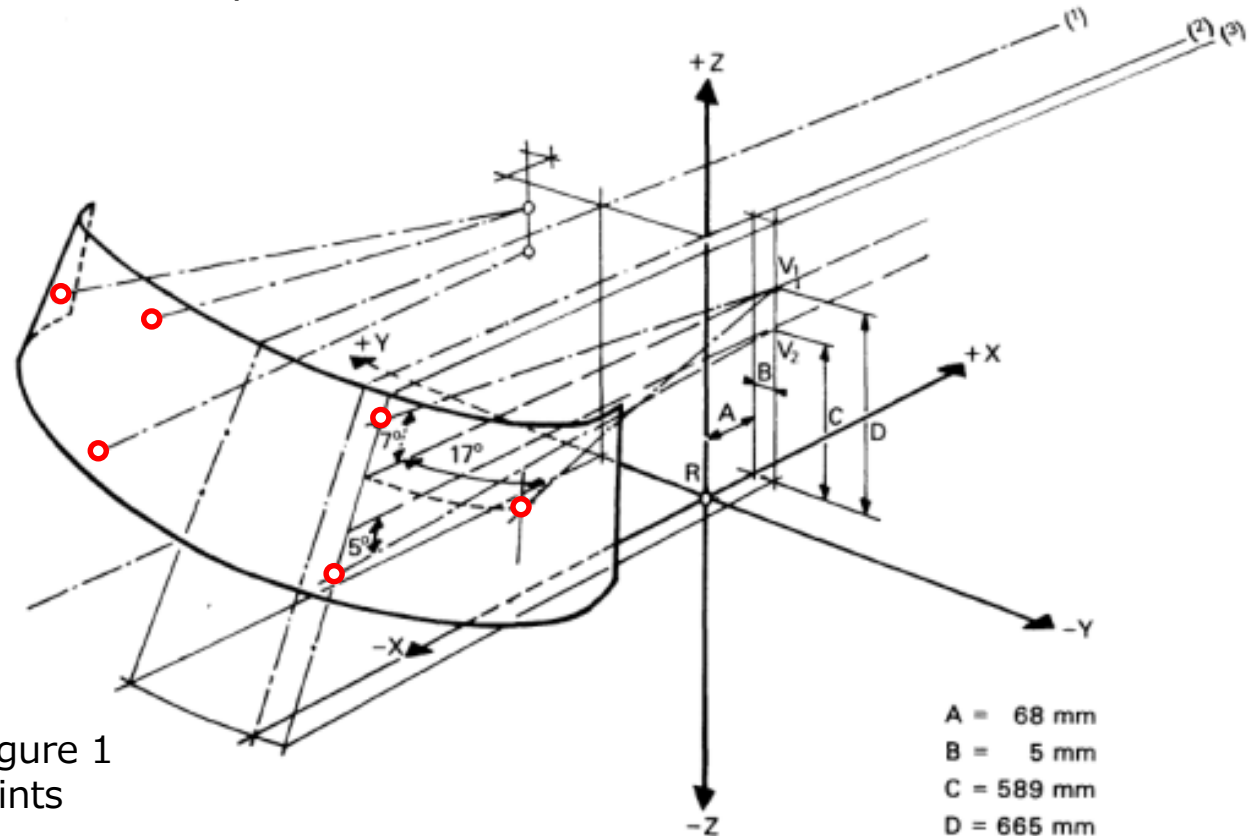
## 5.1. Driver's field of vision.

5.1.1. The transparent area of the windscreen shall include at least the windscreen datum points (see Annex 4, Appendix, Figure 1):

5.1.1.1. A horizontal datum point forward of V1 and  $17^\circ$  to the left (see Annex 4, Appendix, Figure 1);

5.1.1.2. An upper vertical datum point forward of V1 and  $7^\circ$  above the horizontal;

5.1.1.3. A lower vertical datum point forward of V2 and  $5^\circ$  below the horizontal;



Annex 4, Appendix, Figure 1  
Determination of V points

## 5.2. Position of the **V** points

5.2.1. The position of the V points in relation to the "R" point, as indicated by XYZ coordinates from the three dimensional reference grid, are as shown in Tables I and IV.

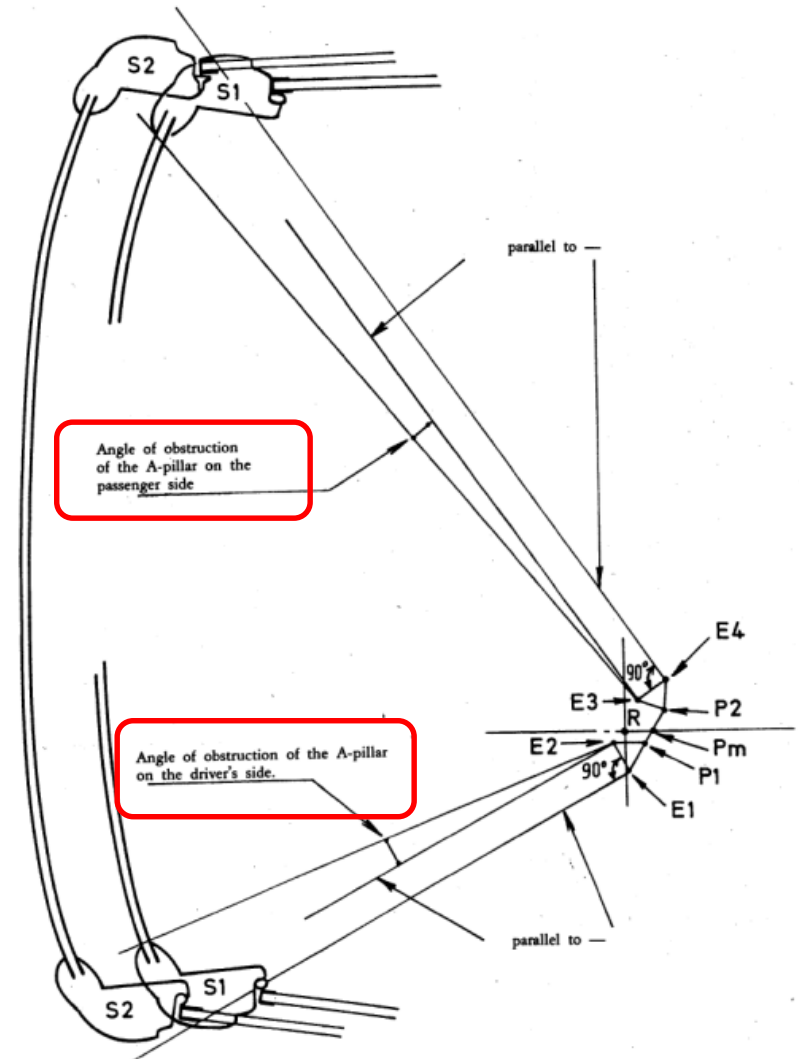
5.2.2. Table I indicates the basic coordinates for a design seat-back angle of 25°. The positive direction for the coordinates is indicated in Annex 4, Appendix, Figure 1.

Table I

<i>V-point</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
V <sub>1</sub>	68 mm	-5 mm	665 mm
V <sub>2</sub>	68 mm	-5 mm	589 mm

# 5. Specification

- 5.1.2. The angle of obstruction for each "A" pillar, as described in paragraph 5.1.2.1. below, shall not exceed  $6^\circ$  (see Annex 4, Appendix, Figure 3). In the case of armoured vehicles that angle shall not exceed  $10^\circ$ .



Annex 4, Appendix, Figure 3  
Angles of obstruction

# 5. Specification

## 5.3. Position of the **P** points

5.3.1. The position of the P points in relation to the "R" point, as indicated by the XYZ coordinates from the three-dimensional reference grid, are as shown by Tables II, III and IV.

5.3.1.1. Table II sets out the base coordinates for a design seat-back angle of 25°. The positive direction of the coordinates is set out in Annex 4, Appendix, Figure 1.

The P<sub>m</sub> point is the point of intersection between the straight line joining P<sub>1</sub>, P<sub>2</sub> and the longitudinal vertical plane passing through the "R" point.

Table II

<i>Point P</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
P <sub>1</sub>	35 mm	-20 mm	627 mm
P <sub>2</sub>	63 mm	47 mm	627 mm
P <sub>m</sub>	43.36 mm	0 mm	627 mm

5.3.1.2. Table III indicates the further corrections to be made to the X coordinates of P<sub>1</sub> and P<sub>2</sub> when the horizontal seat-adjustment range as defined in paragraph 2.16. above exceeds 108 mm. The positive direction for the coordinates is indicated in Annex 4, Appendix, Figure 1.

Table III

<i>Horizontal seat-adjustment range</i>	$\Delta x$
108 to 120 mm	-13 mm
121 to 132 mm	-22 mm
133 to 145 mm	-32 mm
146 to 158 mm	-42 mm
more than 158 mm	-48 mm



# 5. Specification

## 5.4. Correction for design seat-back angles other than 25°

Table IV indicates the further corrections to be made to the X and Z coordinates of each **P point** and each **V point** when the design seat-back angle is not 25°. The positive direction for the coordinates is indicated in Annex 4, Appendix, Figure 1.

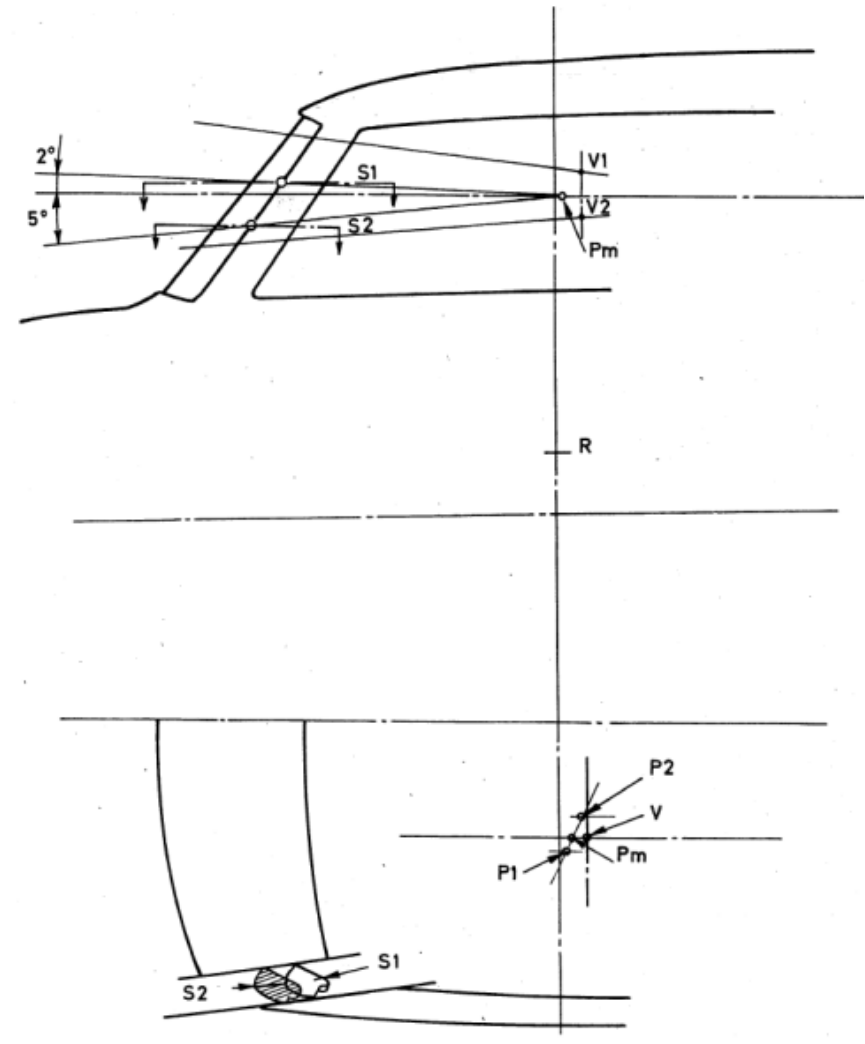
Table IV

Seat-back angle (in °)	Horizontal coordinates $\Delta x$	Vertical coordinates $\Delta z$	Seat-back angle (in °)	Horizontal Coordinates $\Delta x$	Vertical Coordinates $\Delta z$
5	-186 mm	28 mm	23	-18 mm	5 mm
6	-177 mm	27 mm	24	-9 mm	3 mm
7	-167 mm	27 mm	25	0 mm	0 mm
8	-157 mm	27 mm	26	9 mm	-3 mm
9	-147 mm	26 mm	27	17 mm	-5 mm
10	-137 mm	25 mm	28	26 mm	-8 mm
11	-128 mm	24 mm	29	34 mm	-11 mm
12	-118 mm	23 mm	30	43 mm	-14 mm
13	-109 mm	22 mm	31	51 mm	-18 mm
14	-99 mm	21 mm	32	59 mm	-21 mm
15	-90 mm	20 mm	33	67 mm	-24 mm
16	-81 mm	18 mm	34	76 mm	-28 mm
17	-72 mm	17 mm	35	84 mm	-32 mm
18	-62 mm	15 mm	36	92 mm	-35 mm
19	-53 mm	13 mm	37	100 mm	-39 mm
20	-44 mm	11 mm	38	108 mm	-43 mm
21	-35 mm	9 mm	39	115 mm	-48 mm
22	-26 mm	7 mm	40	123 mm	-52 mm

5.1.2.1. The angle of obstruction of each "A" pillar shall be measured by superimposing in a plane the following two horizontal sections:

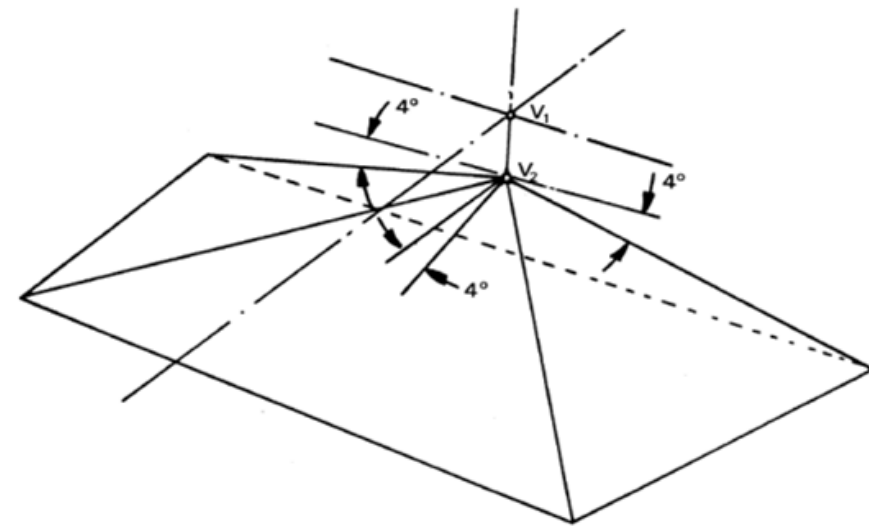
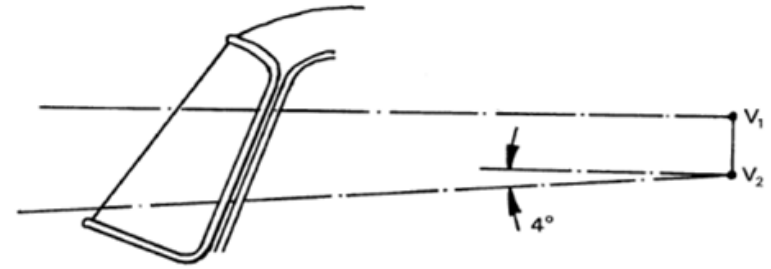
Section 1: Starting from the Pm point situated at the location defined in paragraph 5.3.1.1. below, draw a plane forming an angle of  $2^\circ$  upwards in relation to the horizontal plane passing forward through Pm. Determine the horizontal section of the "A" pillar starting from the foremost point of the intersection of the "A" pillar and the inclined plane (see Annex 4, Appendix, Figure 2).

Section 2: Repeat the same procedure, taking a plane declining at an angle of  $5^\circ$  downwards in relation to the horizontal plane passing forward through Pm (see Annex 4, Appendix, Figure 2).



Annex 4, Appendix, Figure 2  
Observation points of the "A" pillars

- 5.1.3. Except as provided in paragraph 5.1.3.1. or 5.1.3.2. below, other than the obstructions created by the "A" pillars, the fixed or movable vent or side window division bars, outside radio aerials, rear-view mirrors and windscreen wipers, **there should be no obstruction in the driver's 180° forward direct field of vision below a horizontal plane passing through V1, and above three planes through V2, one being perpendicular to the plane X Z and declining forward 4° below the horizontal, and the other two being perpendicular to the plane Y Z and declining 4° below the horizontal** (see Annex 4, Appendix, Figure 4).



Annex 4, Appendix, Figure 4  
Evaluation of obstructions in the 180°  
forward direct field of vision of the driver

## Exemptions

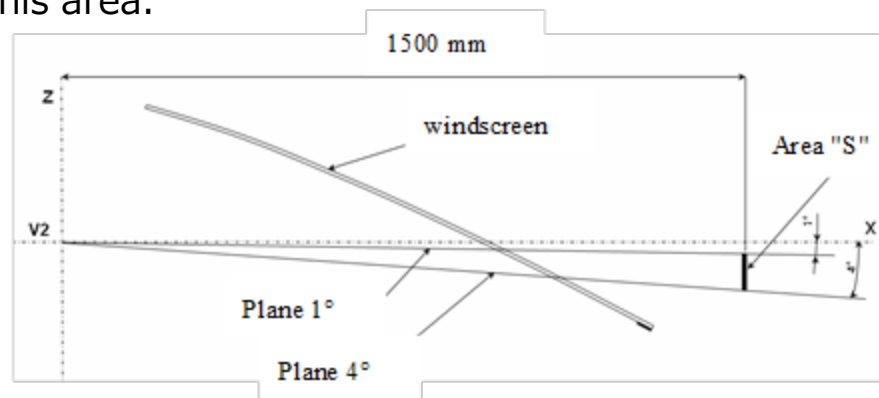
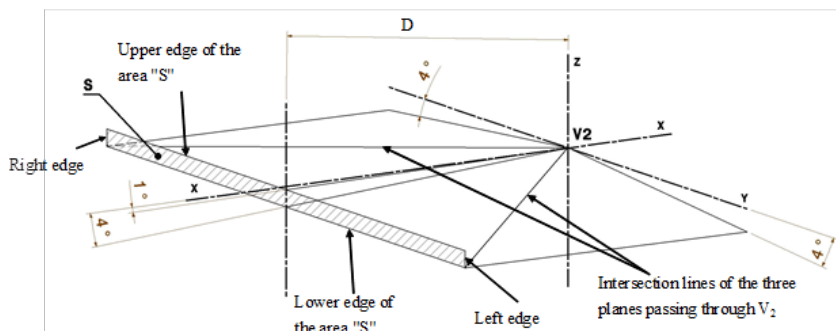
5.1.3. the obstructions created by the "A" pillars, the fixed or movable vent or side window division bars, outside radio aerials, rear-view mirrors and windscreen wipers

(a) Embedded or printed "radio aerial" conductors

(b) Within zone A located "defrosting/demisting" normally in "zigzag" or sinusoidal form

5.1.3.1. An obstruction created by the steering-wheel rim and the instrument panel inside the steering wheel will be tolerated if a plane through V2, perpendicular to the plane x - z and tangential to the highest part of the steering-wheel rim, is declined at least  $1^\circ$  below the horizontal.

5.1.3.2. An obstruction between a plane through V2, and declined at least  $1^\circ$  below the horizontal and a plane through V2 and declined  $4^\circ$  below the horizontal will be tolerated if the conical projection of this obstruction, starting from V2, on an area "S" as defined in paragraph 5.1.3.2.1. below does not exceed 20 per cent of this area.



5.1.4. In the case where the height of V2 above the ground exceeds 1,650 mm, the following requirement shall be met:

A 1,200 mm tall cylindrical object with a diameter of 300 mm that is situated inside the space bounded by a vertical plane located 2,000 mm in front of the vehicle, a vertical plane located 2,300 mm in front of the vehicle, a vertical plane located 400 mm from the driver's side of the vehicle, and a vertical plane located 600 mm from the opposite side of the vehicle shall be at least partially visible when viewed directly from V2 (see Figure 1), regardless of where the object is within that space, unless it is invisible due to a blind spot(s) created by the A pillars, windscreen wipers, or steering wheel.

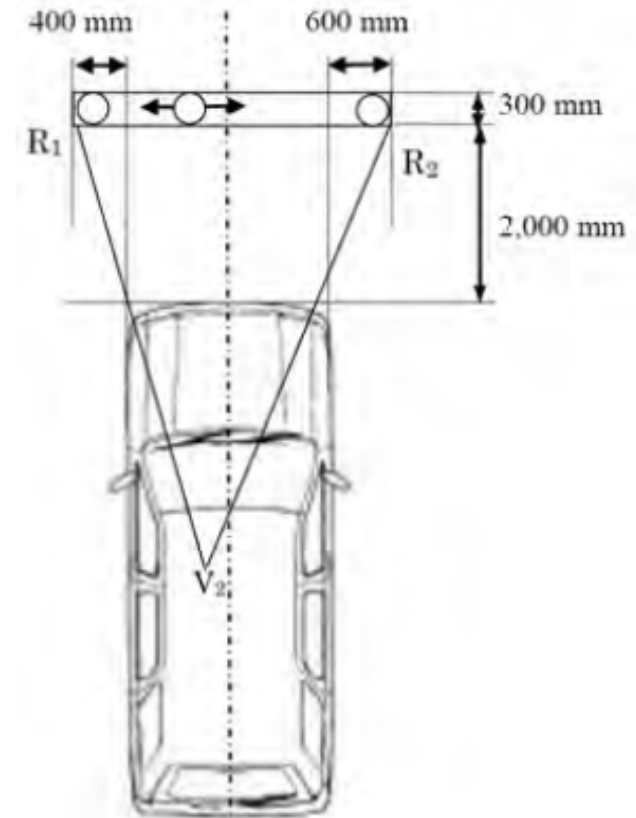


Figure 1

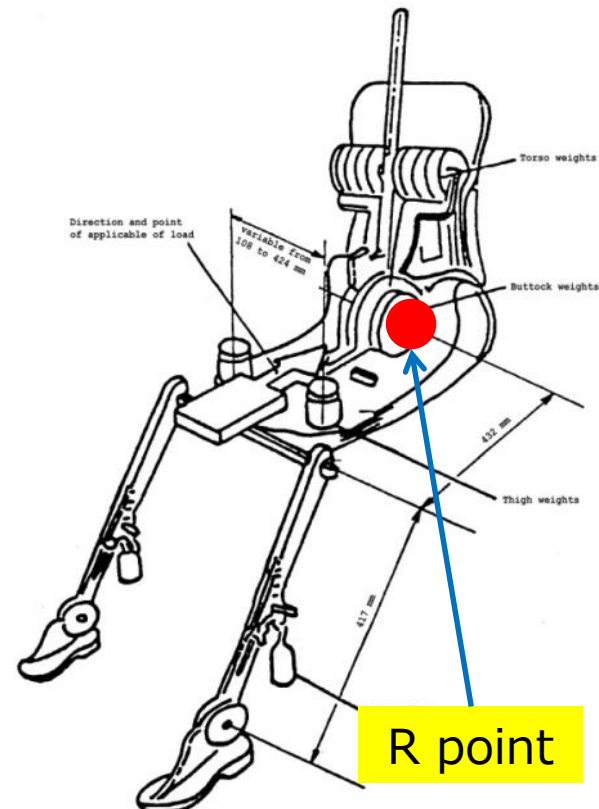
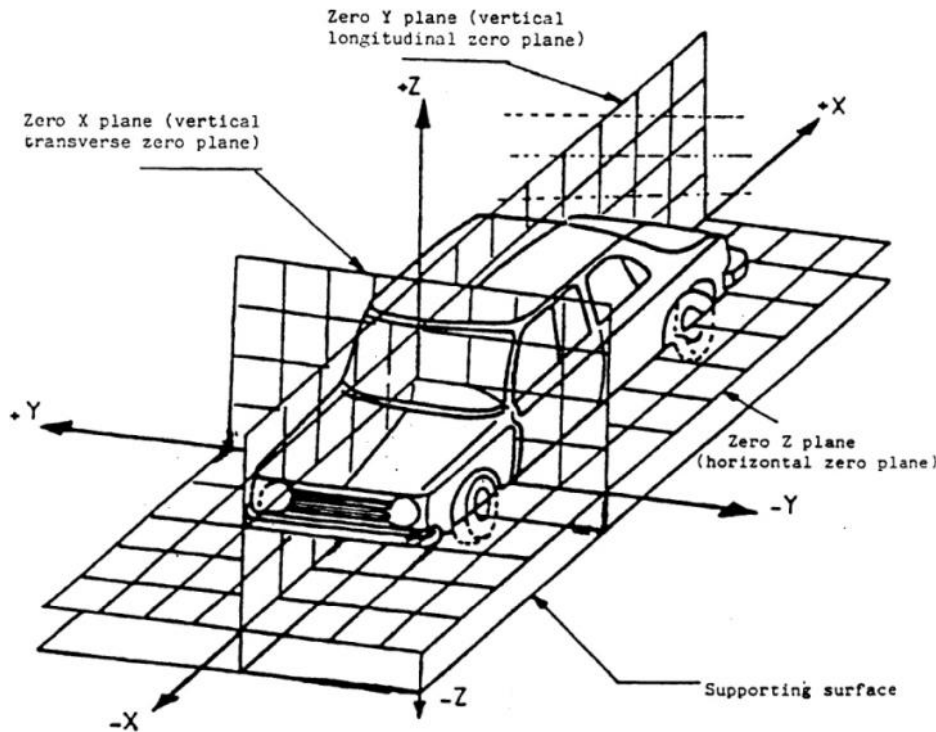
Test procedure is explanation to check specifications written in 5.  
(Almost same procedure for defining points, lines, planes and areas etc.

6.1.5. The manufacturer may measure the angle of obstruction either on the vehicle or in the drawings. In the event of doubt the Technical Services may require the tests be carried out on the vehicle.

Thank you!

## Description of 3 dimensional "H" point machine

Procedure for determining the "H" (R) point and the actual torso angle for seating positions in motor vehicles





Based on Japanese regulation.  
It assume preceding bike visibility.  
Regarding eye point height difference between UN and Japan,  
pole height corrected to 1.2m.

