Informal document **GRSG-123-17**
(123rd GRSG, 28 March - 1 April 2022,
Agenda item 4(e))

Proposal for a new UN Regulation No. XXX (Driver's Awareness of Vulnerable Road Users in Close-Proximity to the Front and Lateral Sides of Vehicles)

Brief explanation of ECE-TRANS-WP.29-GRSG-2022-06, and ECE-TRANS-WP.29-GRSG-2022-08.

JAPAN,
on behalf of
VRU-Proxi Informal Working Group.

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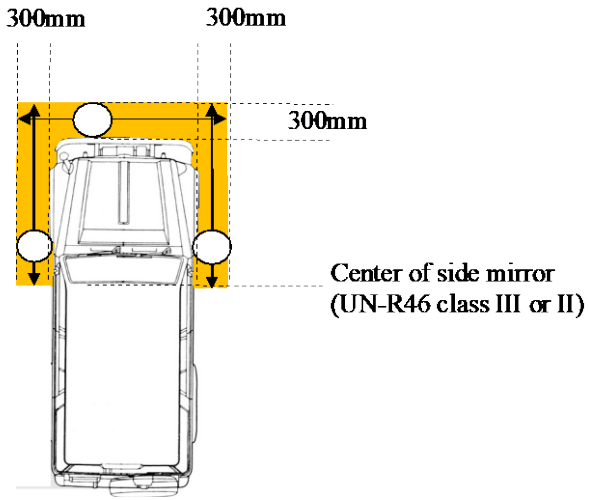
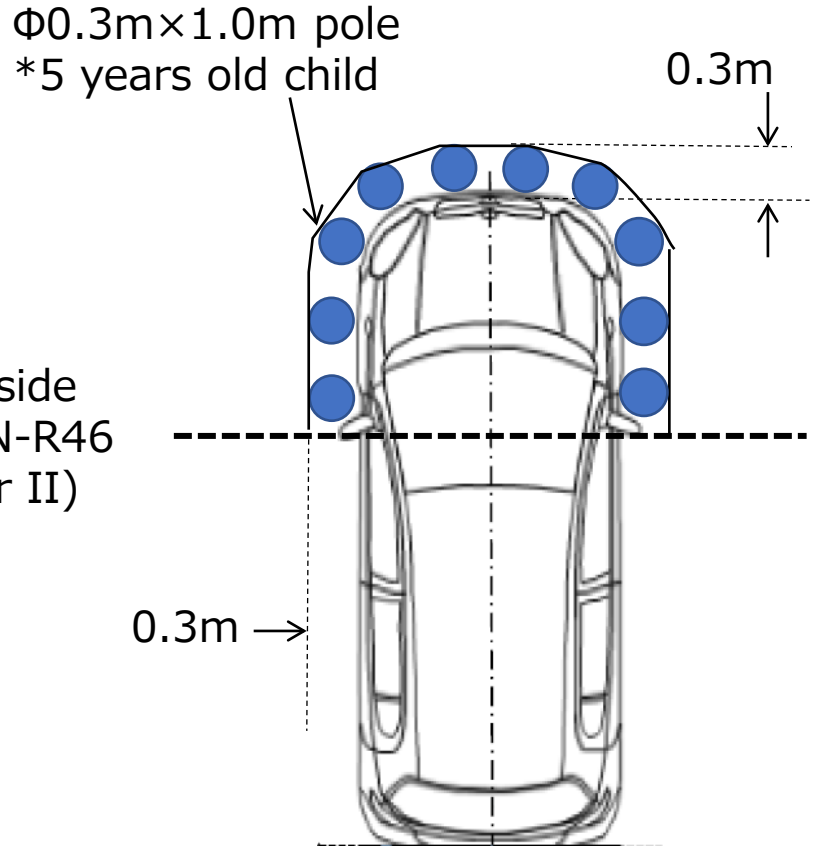
Requirements

Field of driver's front and lateral side close-proximity awareness





Any part of pole to be seen.

Means of driver's front close-proximity awareness

- Direct vision from adjusted driver's ocular point.
- Indirect vision (cameras, mirrors without periscope)
- Detection

* When the class III mirror mounted in front of entire vehicle, field of vision is limited to the front side only.

Requirements

Direct vision

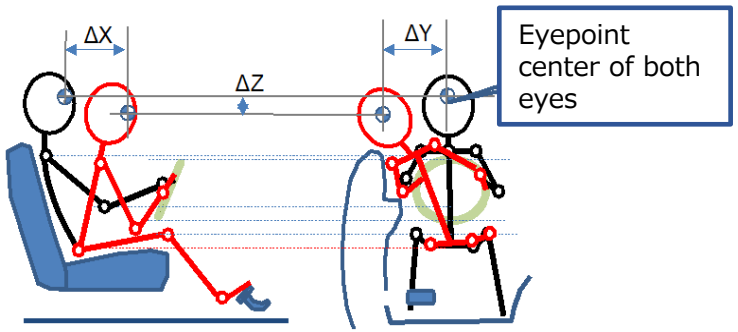
Any part of pole to be seen Via the direct view from ambinocular vision from the adjusted driver's ocular points, or binocular vision from the adjusted ocular reference point.

Methods of driver's ocular point adjustment

(1) Based on back angle　*Same as R125

(2) Based on driver's stretching behavior (passenger's side and front side)

	Adjustment distance [mm]		
	Forward/ rearward	Lateral	Upward/ downward
Upward stretching	0	−10	40
Forward stretching	−140	−15	10
Lateral stretching	30	−110	15



(3) Based on driver looks out of the side window (driver's side)

	Adjustment distance [mm]		
	Forward/ rearward	Lateral	Upward/ downward
Upward stretching	-100	300	0
Forward stretching	-200	250	-50
Lateral stretching	-50	350	-50

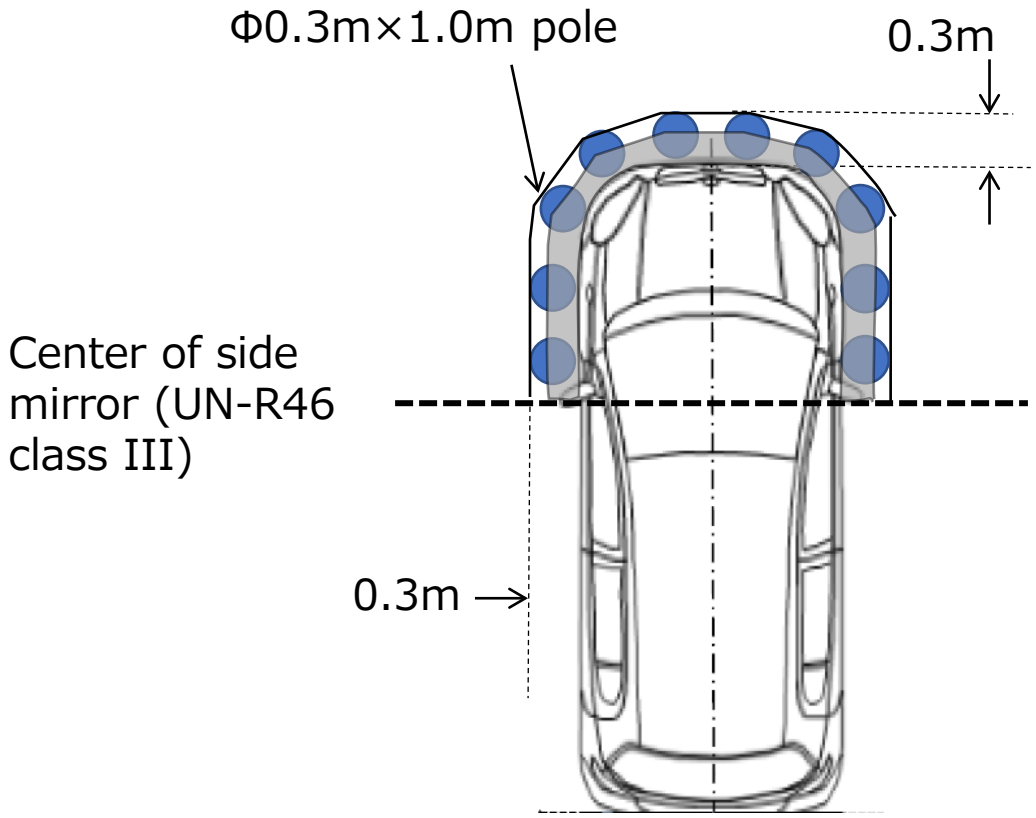
***Right-handed drive case**

Requirements

Indirect vision

Any part of pole to be seen in the camera (FLVCS) image or mirror surface.

Detection



Detection needs 0.2m distance from vehicle.

Pole to be detected in the 0.1m range (rest of filed of vision).

System requirement of activation

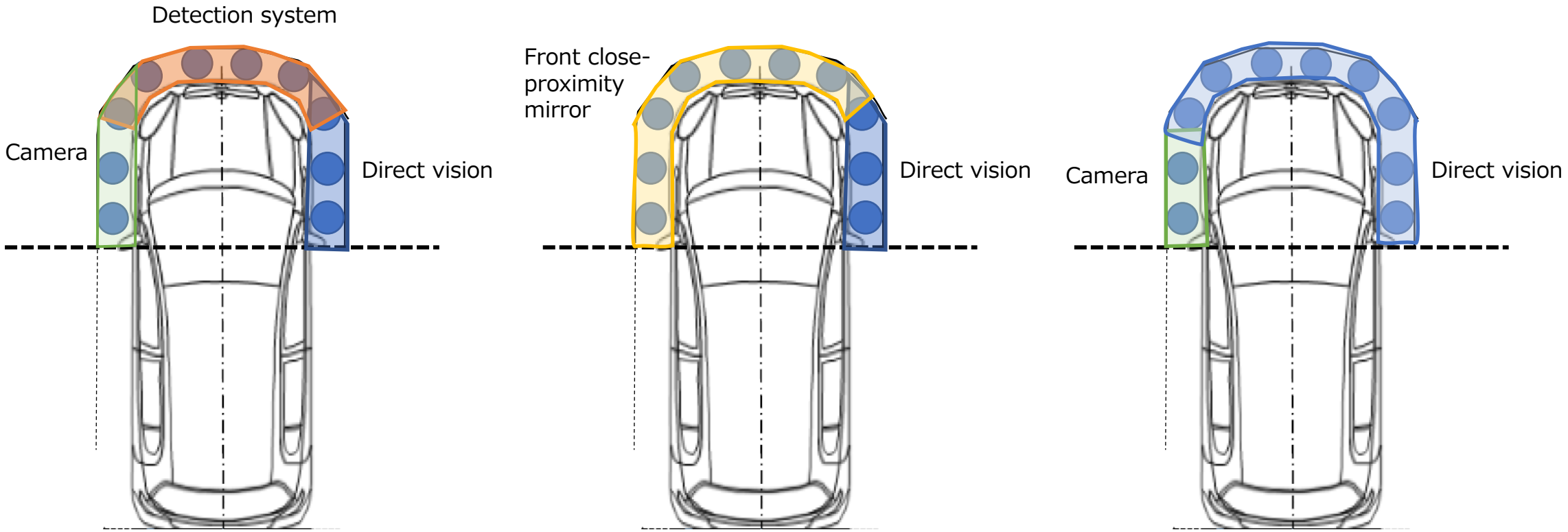
It shall be possible to easily activate the FLVCS and the detection system when the gear is in the out of parking or neutral range.

Requirements

Combination of several means for awareness

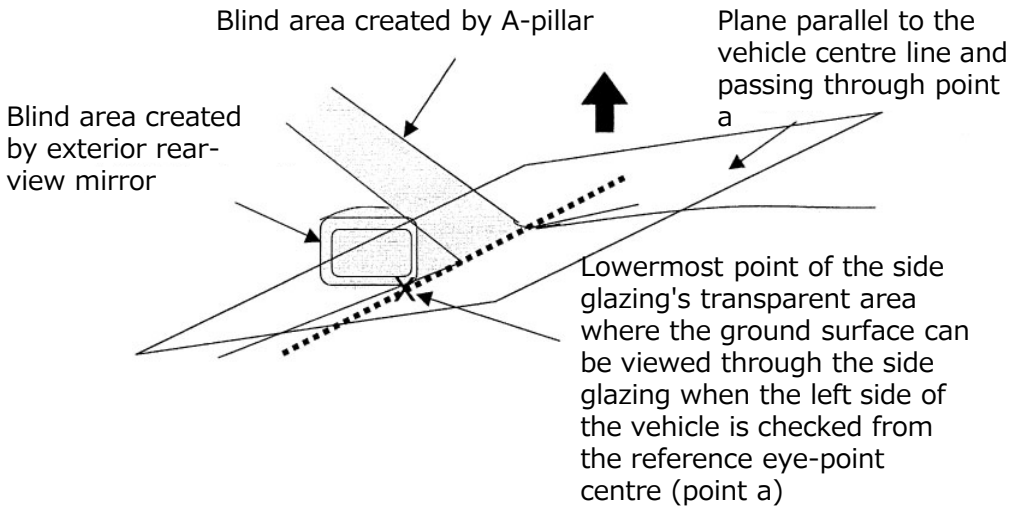
Close-proximity field of awareness shall be fully covered by the single or the combination of means for driver's awareness.

Example ***Right-handed drive case**



Requirements

Exemption by blind area caused by A-pillar and side-mirror mount



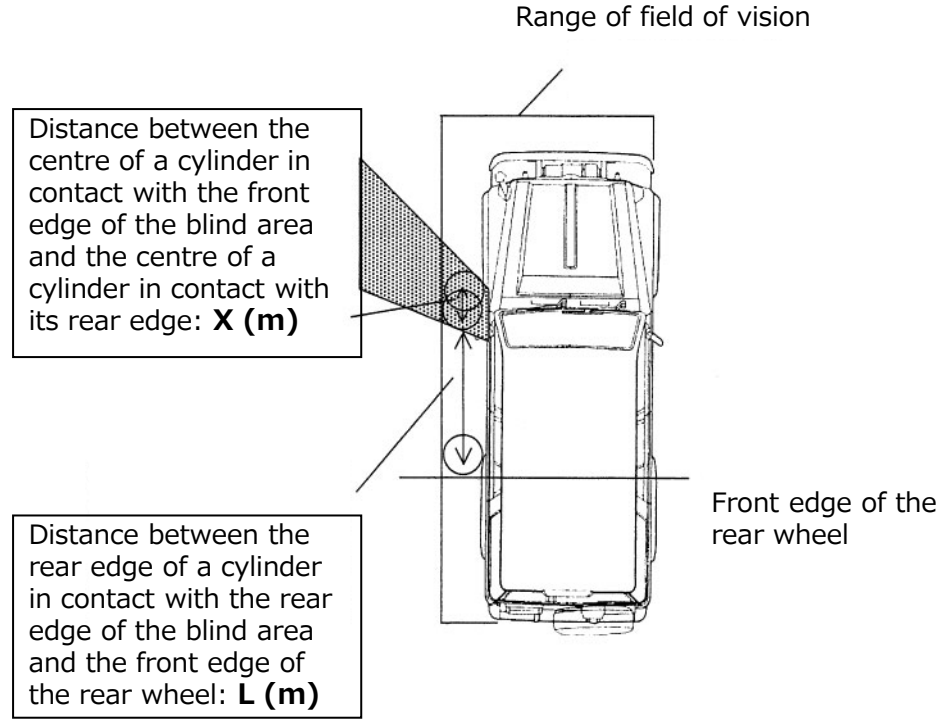
The range of the blind area created by the A-pillar or exterior rear-view mirror in paragraph 15.2.4.10. shall be an area that meets the following formula. In this case, if there are more than one blind area, each blind area shall meet the conditions of the formulae.

$$X \leq 0.292 \cdot L - 0.203$$

Where:

X [m]: is the limit of the excluded area, i.e. the distance between the centre of a cylinder in contact with the front edge of the blind area and the centre of a cylinder in contact with its rear edge.

L [m]: is located inside the blind area created by the A-pillar or exterior rear-view mirror. Distance between the rear edge of a cylinder in contact with the rear edge of the blind area and the front edge of the rear wheel.



Range of exemption was defined based on the study about blind area that driver can stop vehicle after awareness of VRU before contact. (See Appendix).

***Right-handed drive case**

Relationship of 2 working documents

Japanese regulation:
All M and N vehicles Compulsory

Current situation

R46 15.2.1.1.1. Table *extracted

	Class V Passenger-side	Class VI Front
M1	Optional	Optional
M2	Optional	Optional
M3	Optional	Optional
N1	Optional	Optional
$N_2 \leq 7.5$ t	Compulsory	Optional
$N_2 > 7.5$ t	Compulsory	Compulsory
N3	Compulsory	Compulsory

15.2.1.2. Surveillance mirrors

R46

1.2. This Regulation does not apply to devices other than those prescribed under paragraph 1.1.(a) and their installation, for observing the vision area(s) immediately adjacent to the front and/or the passenger's side of vehicles of category M_1, M_2, M_3, N_1 and $N_2 \leq 7.5$ t. **M1, M2, M3, N1 and N2 ≤ 7.5 t exempted.**

If new regulation approved

ECE-TRANS-WP.29-GRSG-2022-06
(New regulation proposal)

Scope **M1**,**N1**

ECE-TRANS-WP.29-GRSG-2022-08
(R46 amendment)

R46 Scope 1.2
~~M1,~~ **M2, M3,** ~~N1~~ **and N2 ≤ 7.5 t exempted.**

Effects and Evaluation Relating to the Close-Proximity Field of Vision Regulation in Japan

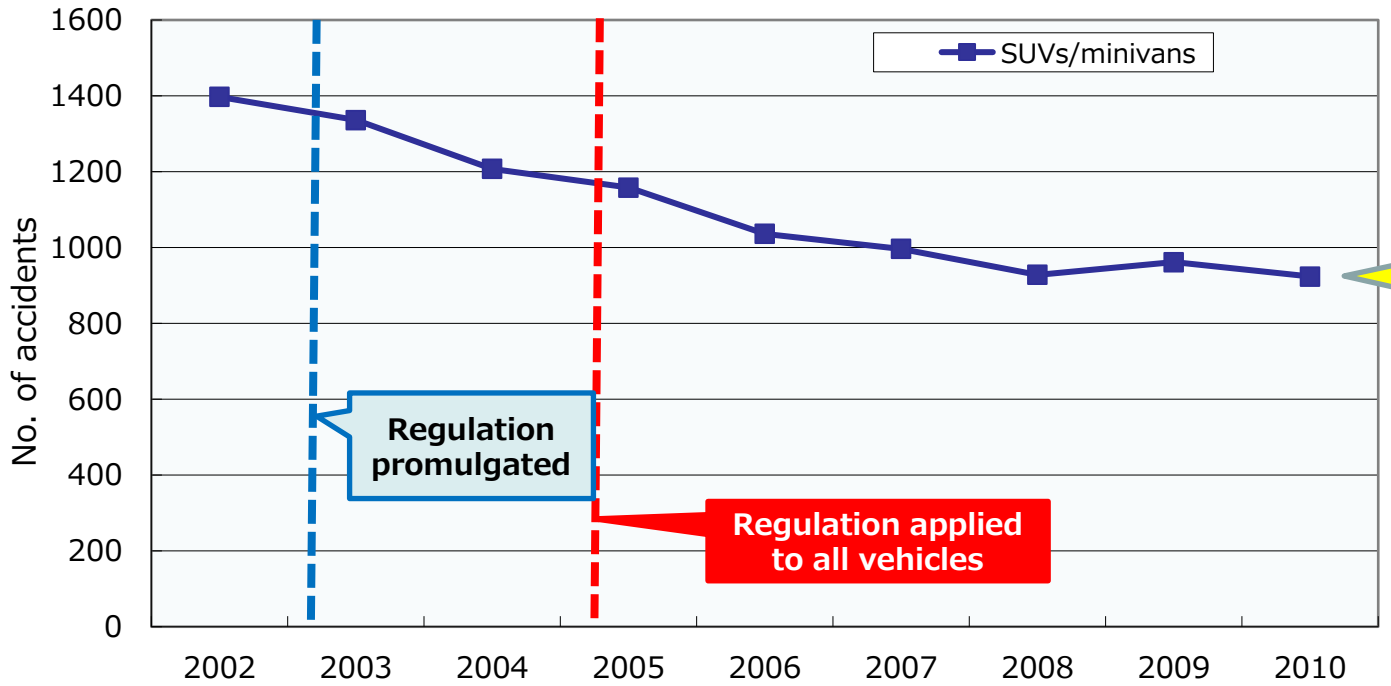
Informal document **GRSG-105-25**
(105th GRSG, 8-11 October 2013)

-- Changes in the Numbers of Accidents Involving Pedestrians at the Start of the Vehicle in Japan --

Data:
* Accidents of SUVs and minivans involving pedestrians (infants to 10-year-olds) at the start of the vehicle.
* SUVs and minivans as they are the primary vehicles of category M1 for which measures need to be taken to comply with the regulation.

Effects of introduction of the regulation:
* Fatal accidents: **Reduced by about 46%** from **24** accidents in 2002 to **13** accidents in 2010.
* Serious injury accidents: **Reduced by about 49%** from **215** accidents in 2002 to **110** accidents in 2010.
* Minor injury accidents: **Reduced by about 31%** from **1158** accidents in 2002 to **800** accidents in 2010.

Included all accidents (Fatal, Serious Injury, Minor Injury)



Accidents reduced overall by about 34%

Conclusion:
The regulation to ensure the close-proximity field of vision is effective to a certain extent for accidents involving children at the start of the vehicle.