



**Economic and Social
Council**

Distr.
RESTRICTED

TRANS/WP.29/GRSG/2003/9
21 February 2003

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 General Safety Provisions (GRSG)
(Eighty-fourth session, 5-9 May 2003,
agenda item 9.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 46

(Rear view mirrors)

Transmitted by the expert from Germany

Note: The text reproduced below has been prepared by the expert from Germany in order to modify the requirements of Regulation No. 46 after the alignment of the Regulation to the new draft European Community Directive amending European Community Directive 71/127/EEC. It refers to the proposal of document TRANS/WP.29/GRSG/2002/10.

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

A. PROPOSAL

Insert a new paragraph 2.1.1.4., to read :

“2.1.1.4. “sight support system” means a system to detect objects in a visual and/or non visual area adjacent to and/or in the surrounding of the vehicle.”

Paragraphs 2.1.1.4. to 2.1.1.14. (former), renumber as paragraphs 2.1.1.5. to 2.1.1.15.

Paragraph 2.1.2.1., amend to read:

“2.1.2.1. "Camera" means a device that renders an image of the outside world by means of a lens onto a light- sensitive electronic detector that then converts this image into a ~~video~~ signal (e.g. video signal).”

Paragraph 2.1.2.2., amend to read:

“2.1.2.2. "Monitor” means a device that converts a ~~video~~ signal into images that are rendered into the visual spectrum.”

Paragraph 2.1.2.6., amend to read:

“2.1.2.6. "Critical object" means a circular object with a diameter $D_0 = 0,8 \text{ m}$ 2/. **Adjacent to the vehicle front (Class V and VI mirror) this should be $D_0 = 0,2\text{m}$.**”

Insert a new paragraph 2.1.5., to read:

“2.1.5. Vehicle dimensions (i.e. length, width, height) means dimensions measured according to ISO standard 612-1978.”

Paragraph 6.2.2.2.2., amend to read:

"6.2.2.2. The monitor shall render a minimum contrast under various light conditions as specified by ~~draft~~ ISO 15008: [2003]."

2/ A system for indirect vision is intended to detect relevant road users. The relevancy of a road user is defined by his or her position and (potential) speed. More or less in proportion with the speed of the pedestrian-cyclist- moped driver, the dimensions of these road users increase as well. For detection purposes a moped driver ($D = 0.8 \text{ m}$) at 40 m distance would be equal to a pedestrian ($D = 0.5 \text{ m}$) at a distance of 25 m. Considering the speeds, the moped driver would be selected as the criterion for the detection size; for that reason an object with a size of 0,8 m shall be used for determining the detection performance.

Paragraph 6.2.3.1., amend to read:

"6.2.3.1 **A camera/monitor**-system shall perceive the visual spectrum and shall always render this image without the need for interpretation into the visual spectrum."

Paragraph 15.1.4., amend to read :

“..... They shall (**in case of mirrors**) be established through windows which have a total light transmission factor of at least 70 per cent measured normal to the surface."

Paragraph 15.2.1.1.1., the table, amend to read:

Vehicle category	Interior mirror	Exterior mirrors				
	Class I	Main mirror (large) Class II	Main mirror (small) Class III	Wide-angle mirror Class IV	Close-proximity mirror Class V	Front mirror Class VI
M ₁	Compulsory Unless a mirror would not provide rearward vision (as defined in paragraph 15.2.4.1.) Optional If the mirror does not provide rearward vision	Optional	Compulsory 1 on the driver's side and 1 on the passenger's side Class II mirrors may be fitted as an alternative.	Optional 1 on the driver's side and / or 1 on the passenger's side	Optional 1 on the driver's side and/or 1 on the passenger's side (both must be fitted at least 2 m above the ground)	Optional (must be fitted at least 2 m above the ground)
M ₂	Optional (no requirements for the field of view)	Compulsory 1 on the driver's side and 1 on the passenger's side	Not permitted	Optional 1 on the driver's side and / or 1 on the passenger's side	Optional 1 on the driver's side and/ or 1 on the passenger's side(both must be fitted at least 2 m above the ground)	Optional (must be fitted at least 2 m above the ground)
M ₃	Optional (no requirements for the field of view)	Compulsory 1 on the driver's side and 1 on the passenger's side	Not permitted	Optional 1 on the driver's side and / or 1 on the passenger's side	Optional 1 on the driver's side and/ or 1 on the passenger's side (both must be fitted at least 2 m above the ground)	Optional (must be fitted at least 2 m above the ground)
N ₁	Compulsory Unless a mirror would not provide rearward vision (as defined in paragraph 15.2.4.1.) Optional If the mirror does not provide rearward vision	Optional	Compulsory 1 on the driver's side and 1 on the passenger's side Class II mirrors may be fitted as an alternative.	Optional 1 on the driver's side and / or 1 on the passenger's side	Optional 1 on the driver's side and/or 1 on the passenger's side (both must be fitted at least 2 m above the ground)	Optional (must be fitted at least 2 m above the ground)

N ₂ ≤ 7,5 t	Optional (no requirements for the field of view)	Compulsory 1 on the driver's side and 1 on the passenger's side	Not permitted	Optional 1 on the driver's side and 1 on the passenger's side	Optional 1 on the passenger's side and/or 1 on Driver's side (both must be fitted at least 2 m above the ground)	Optional 1 front mirror (must be fitted at least 2 m above the ground)
N ₂ > 7,5 t	Optional (no requirements for the field of view)	Compulsory 1 on the driver's side and 1 on the passenger's side	Not permitted	Compulsory 1 on the driver's side and 1 on the passenger's side	Compulsory , see paragraph 15.2.2.7. and 15.2.4.5.5) 1 on the passenger's side Optional 1 on Driver's side (both must be fitted at least 2 m above the ground)	Compulsory , see paragraph 15.2.1.1.2 1. front mirror (must be fitted at least 2 m above the ground)
N ₃	Optional (no requirements for the field of view)	Compulsory 1 on the driver's side and 1 on the passenger's side	Not permitted	Compulsory 1 on the driver's side and 1 on the passenger's side	Compulsory , see paragraph 15.2.2.7. and 15.2.4.5.5) 1 on the passenger's side Optional 1 on driver's side (both must be fitted at least 2 m above the ground)	Compulsory , see paragraph 15.2.1.1.2 1. front mirror (must be fitted at least 2 m above the ground)

”

Paragraph 15.2.1.1.2., amend to read:

“15.2.1.1.2 In the case the described field of vision of a front mirror prescribed in paragraph 15.2.4.6 **and of a close proximity mirror described in paragraph 15.2.4.5** can be obtained by an other device for indirect vision that is approved according to paragraph 6.2. and that is installed according to paragraph 15., this device can be used instead of a mirror.
prescribed in paragraphs 15.2.4.5 and/or 15.2.4.6 while the vehicle

Paragraph 15.2.2.2., amend to read:

“15.2.2.2. Exterior mirrors **and/or the part of exterior mirrors required for the projection of the field of vision defined i paragraph 2.1.1.** shall be visible through the side windows or through the portion of the windscreen that is swept by the windscreen wiper. Nevertheless,
-
- **Class V and VI mirrors**”

Paragraph 15.2.4.3.1., amend to read:

“15.2.4.3.1. Exterior rear-View mirrors Class III

.....

In addition, ~~the road must be visible to~~ **it shall be possible to** the driver **to detect an object with a diameter of 30 cm and a height of 50 cm within an area of 1 m width** ~~over a width of 1 m, which~~ which is bounded by a plane parallel to the median

Paragraph 15.2.4.3.2., amend to read:

“.....

In addition **it shall be possible to** ~~the road must be visible to~~ the driver **to detect an object with a diameter of 30 cm and a height of 50 cm within an area of 1 m width** ~~over a width of 1 m which~~ which is bounded by a plane which is parallel to.....”

Paragraph 15.2.4.6.1., amend to read (figure 8 is not amended):

..... of 2000 mm (see Figure 8).

The vertical transversal plane in front of the vehicle might be shifted up to 30 cm into driving direction if an object right in front of the vehicle with a diameter of 30 cm and a height of 50 cm can be detected. The provisions for front mirrors are compulsory for ~~for~~ forward controlled (as defined in paragraph 12.6) vehicles of categories N2 > 7.5 t and N3. If vehicles of these categories ~~with other construction characteristics regarding the body work~~ cannot fulfil the requirements by using a front mirror or a camera/monitor system, **a sight support system** shall be used.

~~If either of these options do not provide the adequate field of vision then any other device for indirect vision shall be used.~~

In case of a sight support system ~~This~~ **this** device must be able to detect an object of 50 cm height and with a diameter of 30 cm within the field defined in Figure 8.

.....”

Paragraph 15.2.4.8.1., amend to read:

“15.2.4.8.1. Interior rear-view mirror (Class I)

The field of vision may be reduced by the presence of headrest and devices such as, in particular, sun visors, rear windscreen wipers, heating elements and stop lamp of category S3 or by components of bodywork such as window columns of rear split doors, provided that ~~all these devices together do not obscure more than 15 per cent of the prescribed field of vision when projected onto a vertical plane perpendicular to the longitudinal median plane of the vehicle.~~

the required field of vision is reduced only partly. ~~The degree of obstruction shall be measured with the headrests adjusted to their lowest possible position and with the sun visors folded back.”~~

Paragraph 15.2.4.8.2., amend to read:

“15.2.4.8.2. Exterior mirrors (Class II, III, IV, V and VI)

In the fields of vision specified above, obstruction due to the bodywork, **cab** and some of its components,

Paragraph 15.3.5., amend to read:

“15.3.5. Vehicles of category M2 and M3 and complete or completed vehicles of categories N2>7.5 t and N3 ~~having a special bodywork for refuse collection~~ may be equipped on the rear part of their bodywork with a device for indirect vision **and/or a sight support** system other than a mirror ~~in order to ensure~~ the following ~~field area of vision shall be detected:~~”

Paragraph 15.3.5.1., amend to read:

“15.3.5.1. The ~~detection field of vision~~ area (Figure 9) must be such that the driver can see **and/or detect** at least a flat portion of the road, which is bounded by: a vertical plane which is

Paragraph 17.2., correct the word “manufactur**er**ed” to read “manufactured”.

* * *

B. JUSTIFICATION

Re. paragraph 2.1.1.4.

These systems could – as a support system to the required systems of this regulation - detect obstacles and movements and notify a possible conflict to the driver.

Re. paragraph 2.1.2.1.

The limitation to a video signal will hinder innovation (i.e. digital signal). The existing requirement is design restrictive.

Re. Paragraph 2.1.2.2.

See paragraph 2.1.2.1. above

Re. Paragraph 2.1.2.6.

Because of the different views of these mirrors small, non moving objects could be overlooked.

Re. Paragraph 2.1.5.

Measuring according to an international standard unifies the procedure.

Re. Paragraph 6.2.2.2.

The existing text relates to a draft international standard. This should be changed to an agreed international ISO standard (ISO 15008 instead of ISO/DIS 15008)

Re. Paragraph 6.2.3.1.

The modification is necessary after the introduction of " sight support system".

Re. Paragraph 15.1.4.

The modification is necessary after the introduction of "sight support system".

Re. Paragraph 15.2.1.1.1.

The modification gives the manufacturer the possibility to equip mirrors which are necessary for an excellent indirect view which relates to the vehicle's need, taking into account that mirrors are in contradiction to a good direct field of view.

Re. Paragraph 15.2.1.1.2.

The close proximity mirror has the same function as the required front mirror and therefore there is a need to approve systems which inform the driver with the help of a camera/monitor- system, may be in combination with signals produced by a sight support detection system.

The change of the wording from and in and/or is necessary after the change of the table according to paragraph 15.2.1.1.1..

Re. Paragraph 15.2.2.2.

The proposed amendment can be understood as a interpretation of the existing text. The requirements are now clear without any misinterpretation.

The adding of class V mirrors gives the possibility for vehicle manufacturer to introduce e.g. camera/monitor system not only for front mirrors but also for close proximity mirrors .

Re. Paragraph 15.2.4.3.1.

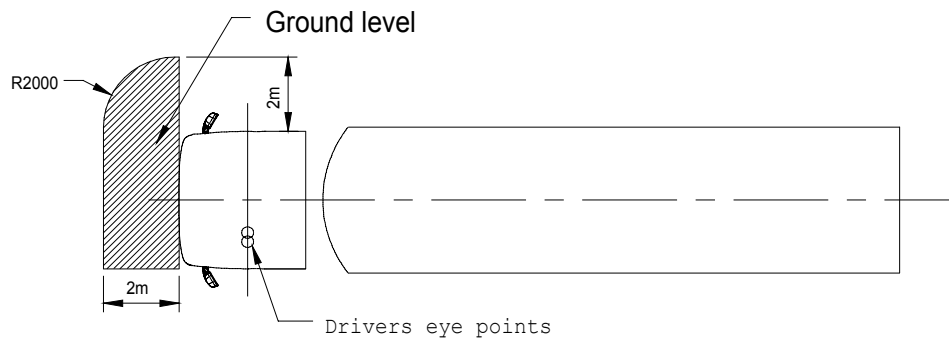
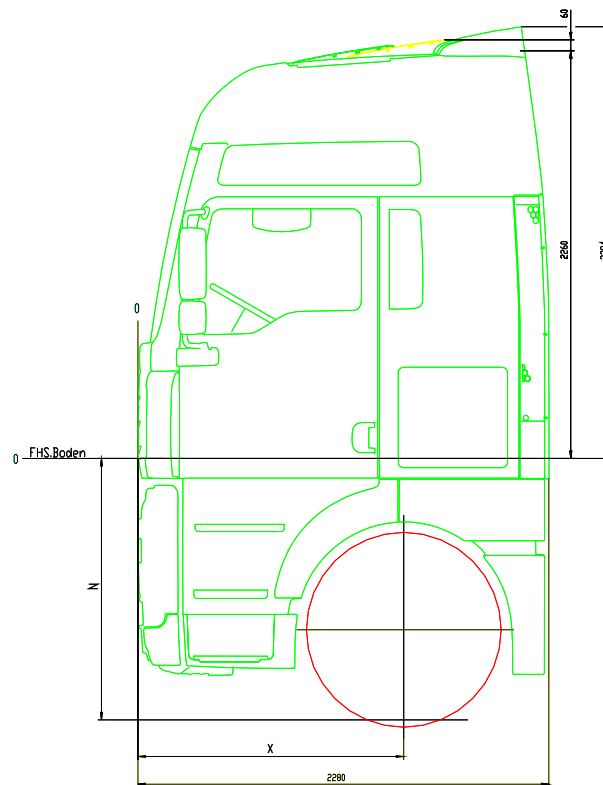
The intension of this adaptation to technical progress should be to increase the angle of view for the driver to detect objects also adjacent to the side of the vehicle so that the "dead angle" is decreased or avoided. The vision of the road surface is not necessary because even very small children have a standing height of at least 50 cm and the usual sitting height in a M1- vehicle is so that the driver can see those objects directly. The introduction of aspherical mirrors would be a better solution for giving the driver a better angle of view. The requirement as given in the proposal would only increase the height of the mirror (glass and housing) but not the width. Without any reason the required width of the class III mirror on the drivers side was reduced to 4m (20m behind the eyepoints) instead of 5 m (corresponds to 2,5 m,10 m behind the eyepoints).

Re. Paragraph 15.2.4.3.2.

Same reason as above.

Re. Paragraph 15.2.4.6.1.

New commercial vehicle cabs are designed to reduce fuel consumption. Therefore mounting a front mirror class VI to a modern cab is difficult. However, small objects have to be detected in front of the vehicle. See pictures.



Re. Paragraph 15.2.4.8.1.

This modification is absolutely necessary because the former exemption to install a second (passengerside) mirror is deleted as this mirror is now obligatory. It is not always possible to comply with the 15% limit of obstruction (e.g. 3.headrest in the rear). The only solution otherwise would be to delete the rear window!

Re. Paragraph 15.2.4.8.2.

The adding of the wording **cab** is necessary because commercial vehicles for the transport of goods have in most cases a **chassis and a cab** and this unit will finalized by "bodywork", either produced by the vehicle manufacturer or by special "bodywork" manufacturer in a second step. The cab sometimes is fitted with special devices like air spoiler to lower energy consumption.

Re. Paragraph 15.3.5.

It should be possible to approve not only a camera/monitor system but also another detection system or the combination of a camera/monitor-system and another detection system which are at present on the market.

This gives the industry the possibility to provide a system or systems which gives the driver the best possibility to recognize persons or obstacles behind the vehicle in the required area.

Re. Paragraph 15.3.5.1.

Necessary adding of the wording after introduction of detection system.

Re. Paragraph 17.2

Correction of typographical error.
