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**PROPOSAL FOR AMENDMENT TO THE PROPOSAL FOR DRAFT 02 SERIES
OF AMENDMENTS TO REGULATION No. 46**

(Document TRANS/WP.29/GRSG/2002/10 and Add.1)

(Rear-view mirrors)

Transmitted by the experts from the Netherlands, Germany, France, the United Kingdom and
the International Organization of Motor Vehicle Manufacturers (OICA)

Note: The text reproduced below was prepared by the experts from the Netherlands, Germany, France, the United Kingdom and OICA, following a decision taken by GRSG at its eighty-sixth session (TRANS/WP.29/GRSG/65, para. 24), in order to improve the alignment of Regulation No. 46 with Directive 2003/97/EC. It is based on documents TRANS/WP.29/GRSG/2002/10 and Add.1, to which it refers, and replaces document TRANS/WP.29/GRSG/2004/10.

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

Insert a new paragraph 2.1.1.4., to read:

"2.1.1.4. "Vision support system" means a system to enable the driver to detect and/or see objects in the area adjacent to the vehicle."

Paragraphs 2.1.1.4. to 2.1.1.11. (former), renumber as paragraphs 2.1.1.5. to 2.1.1.12.

Paragraph 2.1.1.14. (former), renumber as paragraph 2.1.1.13.

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~~ and 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 2.1.2.4., amend to read:

"2.1.2.4. "Luminance contrast" means the brightness ratio between an object and its immediate background/surrounding that allows the object to be distinguished from its background/surroundings."

Paragraph 2.1.2.8., amend to read:

"2.1.2.8. "Field of vision" means the section of the tri-dimensional space ~~in which a critical object can be observed and rendered by the~~ **which is monitored with the help of a device for indirect vision. Unless otherwise stated**, this is based on the view on ground level offered by a device **and/or devices other than mirrors. and might possibly be limited on the basis of the applicable maximum detection distance of the device. This may be limited by the relevant detection distance corresponding to the critical object.**"

Paragraph 2.1.4., amend to read:

"2.1.4. "Type of device for indirect vision" means devices that do not differ on the following essential characteristics:

- design of the device [~~inclusive, if pertinent, the attachment to the bodywork~~];

[Reservation from UK and F]

- in case of mirrors the class, the shape, the dimensions and radius of curvature of the mirror's reflecting surface;

- in case of camera-monitor devices the detection distance and the range of vision."

Paragraph 4.2., amend to read:

"4.2. Every device shall possess ~~on its protective housing~~ a space large enough to accommodate the approval mark, which must be legible when the device has been mounted on the vehicle; this space shall be shown on the drawings referred to in annex 1."

Paragraph 6.1.3.2.2.3., replace the reference to paragraph 2.1.1.10. by a reference to paragraph 2.1.1.11.

Paragraph 6.2.2.2.2., amend to read:

"6.2.2.2.2. The monitor shall render a minimum contrast under various light conditions as specified by ~~international standard~~ ISO 15008:**{2003}**."

Paragraph 6.2.2.2.4., amend to read:

"6.2.2.2.4. The measurements for the luminance contrast shall be carried out according to ISO/~~DIS~~ 15008:**{2003}**."

Paragraph 12.5., should be deleted.

Paragraph 12.6. (former), renumber as paragraph 12.5.

Paragraph 15.1.1., amend to read:

"15.1.1. ~~(reserved)~~ **The devices for indirect vision installed on the vehicle shall be of the type approved under this Regulation.**"

Paragraph 15.1.4., amend to read:

"15.1.4. The fields of vision defined below shall be established using ambinocular vision, the eyes being at the "driver's ocular points" as defined in paragraph 12.1. The fields of vision shall be determined when the vehicle is in **running order as defined in document TRANS/WP.29/78/Rev.1/Amend.2, annex 7, paragraph 2.5.4., plus for M1 and N1 vehicles one front seat passenger (75 kg).** ~~unladen in the condition described in paragraph 12.5. They shall be established through windows which~~ **When established through windows, the glazing shall have a total light transmission factor in accordance with Regulation No. 43, annex 21** ~~of at least 70 per cent measured normal to the surface."~~

[See UN/ECE R43, annex 21, para. 4.2.2.1. of supplement 7]

Paragraph 15.2.1.1.1., the table,

Column "Interior mirror Class I", lines M1 and N1 vehicle categories, amend to read:

["Optional

If the mirror does not provide rearward vision **or, if rearward vision performances specifications, as light transmission factor or glazing transparency, are not achieved.**"]

Column "Close-proximity mirror Class V", lines M1, M2, M3, N1 and N2 ≤ 7,5 t vehicle categories, amend to read:

"Optional

1 on the driver's side and/or 1 on the passenger's side

(if fitted ~~both~~ they must be fitted at least 2 m above the ground)"

Column "Close-proximity mirror Class V", lines N2 > 7.5 t and N3 vehicle categories, amend to read:

"Compulsory,

...

Optional

1 on driver's side

(if fitted ~~both~~ they must be fitted at least 2 m above the ground)"

Column "Front mirror Class VI", amend text between brackets to read:

"(if fitted ~~both~~ they 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 case the described field of vision of a front mirror prescribed in paragraph 15.2.4.6. **and/or a close proximity mirror described in paragraph 15.2.4.5.** can be obtained by another 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 the relevant mirror or mirrors.**

In case a camera/monitor device is used the monitor must exclusively show:

- **the field of vision prescribed in paragraphs 15.2.4.5. when the close proximity mirror has been substituted,**
- **the field of vision prescribed in paragraph 15.2.4.6. when the front mirror has been substituted or,**

- **simultaneously the fields of vision prescribed in paragraphs 15.2.4.5. and 15.2.4.6. when the close proximity mirror and the front mirror have been substituted**, while the vehicle is moving forward with a speed up to 30 km/h.

In case the vehicle is moving with higher speed or moving backwards the monitor can be used to display the field of vision of other cameras mounted to 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 in 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, for design reasons, these last provisions (i.e. the provisions relating the cleaned part of the windscreen) shall not apply to:

- exterior mirrors on the passenger side of vehicles of categories M2 and M3;
- class **V and VI** mirrors."

[reservation from F]

Paragraphs 15.2.4.3.1. and 15.2.4.3.2., amend to read:

"15.2.4.3.1. Exterior rear-view mirror on driver's side

The field of vision ... (see figure 5).

[Subject to paragraph 15.2.4.8.2., in addition, the road must be visible it shall be possible for the driver to detect over its full width an object with a diameter of 30 cm width of 1 m and a height of 50 cm within an area of 1 m width over a width of 1 m, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle starting from a point 4 m behind the vertical plane passing through the driver's ocular points.]

ALTERNATIVE:

[Subject to paragraph 15.2.4.8.2., in addition, the road must be visible it shall be possible for the driver to detect over its full width an object with a diameter of 30 cm and a height of 50 cm within throughout an area of 1 m width over a width of 1 m, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle starting from a point 4 m behind the vertical plane passing through the driver's ocular points.]

[UK to produce results of research before GRSG-87 – F supports alignment on EU directive]

15.2.4.3.2. Exterior rear-view mirror on the passenger's side

The field of vision ... (see figure 5).

[~~Subject to paragraph 15.2.4.8.2., in addition, the road must be visible~~ **it shall be possible for the driver to detect over its full width an object with a diameter of 30 cm width of 1 m and a height of 50 cm within an area of 1 m width** over a width of 1 m, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle starting from a point 4 m behind the vertical plane passing through the driver's ocular points.]

ALTERNATIVE:

[~~Subject to paragraph 15.2.4.8.2., in addition, the road must be visible~~ **it shall be possible for the driver to detect over its full width an object with a diameter of 30 cm and a height of 50 cm within throughout an area of 1 m width** over a width of 1 m, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle starting from a point 4 m behind the vertical plane passing through the driver's ocular points.]

[UK to produce results of research before GRSG – F supports alignment on EU directive]

Paragraph 15.2.4.6.1., amend to read:

"15.2.4.6.1. The field of vision must be such that the driver can see at least a flat horizontal portion of the road, which is bounded by:

- one traverse vertical plane through the outermost point of the front of the vehicle-cab,
- one traverse vertical plane 2 000 mm in front of the vehicle,
- one longitudinal vertical plane parallel to the longitudinal vertical median plane going through the outermost side of the vehicle at the driver's side and,
- one longitudinal vertical plane parallel to the longitudinal vertical median plane 2 000 mm outside the outermost side of the vehicle opposite to the driver's side.

The front of this field of vision opposite to the driver's side may be rounded off with a radius of 2 000 mm (see figure 8).

For the defined field of vision, see also paragraph 15.2.4.8.2.

The provisions for front mirrors are compulsory for forward controlled (as defined in paragraph ~~12.6~~ **12.5.**) vehicles of categories $N_2 > 7.5$ t and N_3 .

If vehicles of these categories ~~with other construction characteristics regarding the bodywork~~ cannot fulfil the requirements by using a front mirror **or** a camera/monitor

device, **a vision 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 the case of a vision support system** 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(s) of category S3 or by components of bodywork such as window columns of rear split doors, provided that **the required field of vision is reduced only partly**. ~~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 degree of obstruction shall be measured with the headrests adjusted to their lowest possible position and with the sun visors folded back."

[F supports alignment on EU directive]

Paragraph 15.2.4.8.2., amend to read:

"15.2.4.8.2. Exterior mirrors (Classes II, III, IV, V and VI)

In the fields of vision specified above, obstruction due to the bodywork and ~~some of~~ its components, such as ~~other cab~~ **other** mirrors, door handles, outline marker lights, direction indicators and **front and** rear bumpers, as well as reflective-surface cleaning components, shall not be taken into account if they are responsible for a total obstruction of less than 10 per cent of the specified field of vision."

Paragraph 15.3.5., amend to read:

"15.3.5. Vehicles **may be equipped with additional devices for indirect vision**. ~~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 other than a mirror in order to ensure the following field of vision.~~

Paragraphs 15.3.5.1. and 15.3.5.2. and figure 9, should be deleted.

Paragraphs 21.2. and 21.3., amend to read:

"21.2. As from [~~1 October 2004~~ **26 January 2006**], Contracting Parties applying this Regulation shall grant ... (remainder unchanged)

- 21.3. As from [~~1 October 2004~~ **26 January 2006**], Contracting Parties applying this Regulation shall grant ... of amendments.
However this date shall be postponed by 12 months with regard to the requirements concerning a Class VI front mirror as a component and its installation on vehicles."

Paragraphs 21.4. and 21.5., amend to read:

"21.4. As from {~~1 October 2008 for vehicles of category M1 and N1 and from 1 October 2005 for vehicles of other categories~~}, Contracting Parties applying this Regulation ... (remainder unchanged)

21.5. As from {~~1 October 2008 for vehicles of category M1 and N1 and from 1 October 2005 for vehicles of other categories~~}, Contracting Parties applying this Regulation ..." (remainder unchanged)"

Paragraph 21.6., replace "(00/series)" by "(00 series)"

Paragraph 21.8., amend to read:

~~"21.8. Notwithstanding the provisions of paragraphs 21.3. and 21.5. above, Contracting Parties applying this Regulation shall continue to grant approvals according to the 01 series of amendments to this Regulation, to devices for indirect vision for use on vehicle types which have been approved before the date mentioned in paragraph 21.2. pursuant to the 01 series of amendments of Regulation No. 10 46, and, where applicable, subsequent extensions to these approvals."~~

Annex 7, paragraph 1.2.2., replace the reference to paragraph 2.1.1.5. by a reference to paragraph 2.1.1.6.
