Aligning of TRANS/WP.29/GRSG/2002/10 with the Common Position of the European Council 41/2003 of 7 April 2003

To align the draft for a revision of ECE-regulation 46 on rear view mirrors with the text of the Common Position 41/2003 of 7 April 2003 on a corresponding amendment of Directive 71/127/EEC the following corrections should be integrated in a new document TRANS/WP.29/GRSG/2002/10 Rev.1:

Reference	**Present text in TRANS/WP.29/GRSG/2002/10**	**To be integrated in TRANS/WP.29/GRSG/2002/10 Rev.1**
para. 2.1.	This can be conventional mirrors, camera-monitor or other devices able to submit information about the indirect field of vision to the driver.	**These** can be conventional mirrors, camera-monitor**s** or other devices able to **present** information about the indirect field of vision to the driver.
para. 2.1.1.9.	"Aspherical mirrors" means a mirror comprising of a spherical and an aspherical part, in which the transition of the reflecting surface from the spherical to the aspherical part has to be marked. The curvature of the main axis of the mirror is defined in the x/y Co-ordinate system defined by the radius of the spherical primary calotte with: $Y = R - \sqrt{(R^2 - x^2)} + k(x-a)^3$	"Aspherical **mirror** " means a mirror **composed** of a spherical and an aspherical part, in which the transition of the reflecting surface from the spherical to the aspherical part has to be marked. The curvature of the main axis of the mirror is defined in the x/y Co-ordinate system defined by the radius of the spherical primary calotte with: $\boldsymbol{y} = R - \sqrt{(R^2 - x^2)} + k(x-a)^3$
para. 5.1.	paragraph**s**	paragraph
para. 6.1.2.1.2.1.	The dimensions of the reflecting surface must be such that it is possible to inscribe therein: a rectangle 40 mm high the base length of which, measured in millimetres, has the value 'a'; a segment which is parallel to the height of the rectangle and the length of which, expressed in millimetres, has the value 'b'.	The dimensions of the reflecting surface must be such that it is possible to inscribe therein: **-** a rectangle 40 mm high the base length of which, measured in millimetres, has the value 'a'; **-** a segment which is parallel to the height of the rectangle and the length of which, expressed in millimetres, has the value 'b'.

para. 6.1.2.1.2.2.	[mm]	**(mm)** twice
para. 6.1.2.2.4.1.	1,200 mm for interior rear-view mirrors (Class I);	**1 200** mm for interior rear-view mirrors (Class I);
para. 6.1.2.2.4.2.	1,200 mm for Class II and III main exterior rear-view mirrors;	**1 200** mm for Class II and III main exterior rear-view mirrors;
para. 6.1.2.2.5.	The value of the normal coefficient of reflection, as determined according to the method described in annex 6, must be not less than 40 per cent. In the case of reflecting surfaces with a changeable degree of reflection, the 'day' position must allow the colours of the signals used for road traffic to be recognised. The value of the normal coefficient of reflection in the 'night' position must be not less than 4 per cent.	The value of the normal coefficient of reflection, as determined according to the method described in annex 6, must be not less than 40 **%**. In the case of reflecting surfaces with a changeable degree of reflection, the 'day' position must allow the colours of the signals used for road traffic to be recognised. The value of the normal coefficient of reflection in the 'night' position must be not less than 4 **%.**
para. 6.1.3.2.1.2.	$m_o = 6,8 \pm 0,05$ kilograms (the relationship of	$m_o = 6,8 \pm 0,05$ kilograms**. The** relationship of
para. 6.1.3.2.2.2.1.	Mirrors shall be positioned on the pendulum impact rig such that	Mirrors shall be positioned on the pendulum impact rig **in** such **a way** that
para. 6.1.3.2.2.4.	The displacement must be no greater than is strictly necessary for the execution of the test; it must be limited in such a way that: either the sphere delimiting the hammer remains at least tangential to the cylinder as defined in paragraph 6.1.1.5.; or the point of contact with the hammer is located at least 10 mm from the periphery of the reflecting surface.	The displacement must be no greater than is strictly necessary for the execution of the test; it must be limited in such a way that: **-** either the sphere delimiting the hammer remains at least tangential to the cylinder as defined in paragraph 6.1.1.5.; **-** or the point of contact with the hammer is located at least 10 mm from the periphery of the reflecting surface.
para. 6.1.3.2.2.6.1.	Interior mirrors Test 1:The points of impact shall be as defined in paragraph 6.1.3.2.2.3. The impact must be such that the hammer strikes the mirror on the reflecting surface side.	Interior mirrors **-** Test 1:The points of impact shall be as defined in paragraph 6.1.3.2.2.3. The impact must be such that the hammer strikes the mirror on the reflecting surface side.

	Test 2: Point of impact on the edge of the protective housing, such that the impact produced makes an angle of 45° with the plane of the reflecting surface and is situated in the horizontal plane passing through the centre of that surface. The impact must occur on the reflecting surface side.	**-** Test 2: Point of impact on the edge of the protective housing, such that the impact produced makes an angle of 45° with the plane of the reflecting surface and is situated in the horizontal plane passing through the centre of that surface. The impact must occur on the reflecting surface side.
para. 6.1.3.2.2.6.2.	Exterior mirrors Test 1: The point of impact shall be as defined in paragraph 6.1.3.2.2.3. or 6.1.3.2.2.4. The impact must be such that the hammer strikes the mirror on the reflecting surface side. Test 2: The point of impact shall be as defined in paragraph 6.1.3.2.2.3. or 6.1.3.2.2.4. The impact must be such that the hammer strikes the mirror on the side opposite to the reflecting surface. Where Class II or III rear-view mirrors are fixed to the same mounting as Class IV rear-view mirrors, the above mentioned tests shall be executed on the lower mirror. Nevertheless, the technical service responsible for testing may repeat one or both of these tests on the upper mirror if this is less than 2 m from the ground.	Exterior mirrors **-** Test 1: The point of impact shall be as defined in paragraph 6.1.3.2.2.3. or 6.1.3.2.2.4. The impact must be such that the hammer strikes the mirror on the reflecting surface side. **-** Test 2: The point of impact shall be as defined in paragraph 6.1.3.2.2.3. or 6.1.3.2.2.4. The impact must be such that the hammer strikes the mirror on the side opposite to the reflecting surface. Where Class II or III rear-view mirrors are fixed to the same mounting as Class IV rear-view mirrors, the **abovementioned** tests shall be executed on the lower mirror. Nevertheless, the technical service responsible for testing may repeat one or both of these tests on the upper mirror if this is less than 2 m from the ground.
para. 6.2.2.1.1.	must have a radius of curvature ‘c’ of not less than 2,5 mm.	must have a radius of curvature **”c”** of not less than 2,5 mm.
para. 6.2.2.2.2.	by draft international standard ISO/DIS 15008.	by international standard **ISO 15008**.
para. 6.2.2.2.4.	The measurements for the luminance contrast shall be carried out according to ISO/DIS 15008	The measurements for the luminance contrast shall be carried out according to **ISO 15008**
para. 6.2.3.2.	The functionality shall be guaranteed under the circumstances of use in which the system shall be put into service. Depending on the technology used in obtaining images and presenting them paragraph 6.2.2.2. shall be	The functionality shall be guaranteed under the circumstances of use in which the system shall be put into service. Depending on the technology used in obtaining images and presenting them paragraph 6.2.2.2. shall be entirely or partly

	applicable entirely or partly. In other cases this can be achieved by establishing and demonstrating by means of system sensitivity analogous to paragraph 6.2.2.2. that a function is ensured that is comparable to or better than what is required for and by demonstrating that a functionality is guaranteed that is equivalent or better than the one that is required for mirror- or camera-monitor type devices for indirect vision.	**applicable**. In other cases this can be achieved by establishing and demonstrating by means of system sensitivity analogous to paragraph 6.2.2.2. that a function is ensured that is comparable to or better than what is-required for and by demonstrating that a functionality is guaranteed that is equivalent or better **than that required** for mirror- or camera-monitor type devices for indirect vision.
para. 8.3.	The minimum requirements for conformity of production proceduresset forth in annex 9 to this Regulation shall be complied with.	The minimum requirements for conformity of production **procedures set** forth in annex 9 to this Regulation shall be complied with.
para. 12.3.3.	The co-ordinates of point R	The **coordinates** of point R
para. 12.6.	"Forward control" means	"Forward control" means
para. 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 unladen in the condition described in paragraph 12.5. 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.	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 unladen** in the condition described in paragraph 12.5. They shall [in case of mirrors] be established through windows which have a total light transmission factor of at least **70 %** measured normal to the surface.
para. 15.2.1.1.1.	The fields of vision prescribed in paragraph 15.2.4. shall be obtained from the minimum number on mandatory mirrors set out in the following table. Where the presence of a mirror is not requested on mandatory base, this means that no other system for indirect vision can be requested on mandatory base.	The fields of vision prescribed in paragraph 15.2.4. shall be obtained from the minimum number on mandatory mirrors set out in the following table. Where the presence of a mirror is not requested on **a** mandatory base, this means that no other system for indirect vision can be requested on **a** mandatory base.
para. 15.2.1.1.2.	In case a camera/ monitor device is used the monitor must exclusively show the field of vision prescribed in paragraphs 15.2.4.5. and 15.2.4.6. while the vehicle …	In case a camera/ monitor device is used the monitor must exclusively show the field of vision prescribed in **paragraph 15.2.4.6**. while the vehicle …
para. 15.2.2.3.	In the case of any vehicle, which is tested in chassis/cab form when the field of vision is measured, the minimum and maximum body widths shall be stated by the manufacturer and, if necessary, simulated by dummy headboards. All vehicles and mirror configurations taken	In the case of any vehicle, which ~~**is tested**~~ in chassis/cab form when the field of vision is measured, the minimum and maximum body widths shall be stated by the manufacturer and, if necessary, simulated by dummy headboards. All vehicles and mirror configurations taken into consideration

	into consideration during the tests shall be shown on the type-approval certificate for a vehicle with regard to the installation of mirrors (see annex 4).	during the tests shall be shown on the type-approval certificate for a vehicle with regard to the installation of mirrors (see annex 4).
para. 15.2.2.7.	These mirrors shall not, however, be mounted on vehicles the cab height of which is such as to prevent compliance with this requirement, in this case an other device for indirect vision is not requested.	These mirrors shall not, however, be mounted on vehicles the cab height of which is such as to prevent compliance with this **requirement. In** this case an other device for indirect vision is not requested.
para. 15.2.4.1.	at least a 20-m-wide	at least a **20 m wide**
	Drivers eye points	**Driver's ocular** points
	<u>Figure 3</u>: Field of Vision of Class I mirror	<u>Figure 3</u>: Field of **v**ision of Class I mirror
para. 15.2.4.2.1.	at least a 5-m-wide	at least a **5 m wide**
para. 15.2.4.2.2.	at least a -m-wide	at least a **5 m wide**
	Drivers eye points	**Driver's ocular** points
	<u>Figure 4</u>: Field of Vision of Class II mirror	<u>Figure 4</u>: Field of **v**ision of Class II mirror
para. 15.2.4.3.2.	at least a 4-m-wide	at least a **4 m wide**
	n addition, the road must be visible to the driver over a width of 1 m which is bounded by a plane which is parallel	**In** addition, the road must be visible to the driver over a width of 1 m**,** which is bounded by a plane which is parallel
	Drivers eye points	**Driver's ocular** points
	<u>Figure 5</u>: Field of Vision of Class III mirror	<u>Figure 5</u>: Field of **v**ision of Class III mirror
para. 15.2.4.4.1.	at least a 15-m-wide	at least a **15 m wide**
	4.5 m	4,5 m
	1.5 m	1,5 m
para. 15.2.4.4.2.	at least a 15-m-wide	at least a **15 m wide**
	4.5 m	4,5 m
	1.5 m	1,5 m
	Drivers eye points	**Driver's ocular** points
para. 15.2.4.5.3.	1.75 m	1,75 m
para. 15.2.4.5.5.	In case the field of vision described in Figure 7 can be perceived through the combination of the field of vision from a Class IV wide-angle mirror and that of a Class VI front mirror, the installation of a class V close proximity mirror is not compulsory.	In case the field of vision described in **Figures 7a and 7b** can be perceived through the combination of the field of vision from a Class IV wide-angle mirror and that of a Class VI front mirror, the installation of a **Class** V close proximity mirror is not compulsory
para. 15.2.4.5.5. figure 7a	Ground	Ground **level**

para. 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 though 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 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 though 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.
	body-work	bodywork
	Drivers eye points	**Driver's ocular** points
para. 15.2.4.6.2.	1.200 mm	1 200 mm
para. 15.2.4.8.1.	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.	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**.]**
para. 15.3.1.	A device for indirect vision shall give such performances that the critical object can be observed within the described field of vision, taken into account the critical perception.	A device for indirect vision shall give such performances that **a** critical object can be observed within the described field of vision, **taking** into account the critical perception
para. 15.3.3.	For the determination of the detection distance and the verification of the functional requirements in case of camera-monitor devices for indirect vision, the procedure of annex 10 shall be applied.	For the determination of the **detection distance in** case of camera-monitor devices for indirect vision, the procedure of annex 10 shall be applied.
para. 15.3.5.	field of vision	field of vision**.**

para. 15.3.5.1.	The field of vision (figure 9) must be such that the driver can see at least a flat horizontal portion of the road, which is bounded by : a vertical plane aligned to the furthest rear point of the complete vehicle and perpendicular to the longitudinal vertical median plane of the vehicle; a vertical plane which is parallel to and positioned 2000 mm to the rear of the previous plane (with respect to the rear of the vehicle); two longitudinal vertical planes defined at the outermost sides of the vehicle and which are parallel to the longitudinal vertical median plane of the vehicle.	The field of vision (figure 9) must be such that the driver can see at least a flat horizontal portion of the road, which is bounded by : **-** a vertical plane aligned **on** the furthest rear point of the complete vehicle and perpendicular to the longitudinal vertical median plane of the vehicle; **-** a vertical plane which is parallel to and positioned 2000 mm to the rear of the previous plane (with respect to the rear of the vehicle); **-** two longitudinal vertical planes defined at the outermost sides of the vehicle and which are parallel to the longitudinal vertical median plane of the vehicle.
para. 17.2.	manufactur**er**ed	manufactured
Annex 1, point 9.2.	Sufficiently detailed drawings to identify the complete device including installation prescriptions; the position for the type-approval mark has to be indicated on the drawings:	Sufficiently detailed drawings to identify the complete device including installation **instructions**; the position for the type-approval mark has to be indicated on the drawings
Annex 2, heading	A4 paper or in a folder	A4 paper or **on** a folder
Annex 2, point 12.1.2.1.	Sufficiently detailed drawings with the installation prescriptions::	Sufficiently detailed drawings with the installation **instructions:**
Annex 4, appendix, item 4.	drivers'seating	driver's seating
Annex 6, point 1.1.3.	CIE 1931 standard colorimetric observer 3/ Receptor of radiation whose colorimetric characteristics correspond to the spectral tristimulus values $\bar{x}(\lambda)$, $\bar{y}(\lambda)$, $\bar{z}(\lambda)$ (see table).	CIE 1931 standard colorimetric observer **1/:** Receptor of radiation whose colorimetric characteristics correspond to the spectral tristimulus values $\bar{x}(\lambda)$, $\bar{y}(\lambda)$, $\bar{z}(\lambda)$ (see table).
Annex 6, point 1.1.4.	CIE spectral tristimulus values 1/: Tristimulus values of the spectral components of an equi-energy spectrum in the CIE (XYZ) system.	CIE spectral tristimulus values 1/: Tristimulus values of the spectral components of an **equi energy** spectrum in the CIE (XYZ) system.
Annex 6, point 1.1.5.	of at least several candelas per square metre.	of at least several **cd/m^2**.
Annex 6, point 2.3.	50 per cent	50 **%**

Annex 6, point 2.4.	within ± 2 per cent of full scale, or ± 10 per cent	within ± 2 % of full scale, or ± 10 %
Annex 6. point 3.1.	100 per cent	100 **%** (twice)
Annex 7	PROCEDURE FOR DETERMINING THE RADIUS OF CURVATURE 'R' OF THE REFLECTING SURFACE OF A MIRROR	PROCEDURE FOR DETERMINING THE RADIUS OF CURVATURE **'r'** OF THE REFLECTING SURFACE OF A MIRROR
Annex 7, point 1.1.	A 'spherometer' similar to the one	A **"**spherometer**"** similar to the one
Annex 10	CALCULATION OF THE DETECTION DISTANCE AND VERIFICATION OF FUNCIONAL REQUIREMENTS OF A CAMERA MONITOR DEVICE FOR INDIRECT VISION 1. CALCULATION OF THE DETECTION DISTANCE	CALCULATION OF THE DETECTION DISTANCE **1. CAMERA MONITOR DEVICE FOR INDIRECT VISION**
Annex 10, point 1.2.	The manufacturer shall supply the values for H_m, N_m and D_m.	The manufacturer shall supply the values for H_m **and N_m.**
Annex 10, point 2.	SECUNDAIRY FUNCTIONAL REQUIREMENTS Based on the installation conditions, a determination shall be made to discover whether the entire device can still satisfy the functional requirements listed in paragraph 6.2.2. of this Regulation, especially the glare correction, the maximum and minimum luminance of the monitor. It shall also be determined the degree to which the glare correction will be addressed and the angle at which sunlight can strike a monitor and compared to the corresponding measuring results from the system measurements. This can be done as based on a CAD-generated model, a determination of the angles of light for the device when mounted on the relevant vehicle, or by carrying out relevant measurements on the relevant vehicle as described in paragraph 6.2.2.2. of this Regulation.	~~SECUNDAIRY~~ FUNCTIONAL REQUIREMENTS Based on the installation conditions, a determination shall be made to discover whether the entire device can still satisfy the functional requirements listed in paragraph 6.2.2. of this Regulation, especially the glare correction, the maximum and **the** minimum luminance of the monitor. It shall also be determined the degree to which the glare correction will be addressed and the angle at which sunlight can strike a monitor and **these shall be** compared to the corresponding measuring results from the system measurements. This can be based on either a CAD-generated model, a determination of the angles of light for the device when mounted on the relevant vehicle, or by carrying out relevant measurements on the relevant vehicle as described in paragraph 6.2.2.2. of this Regulation

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