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Item 4.7.1 of the provisional agenda
1958 Agreement:
Consideration of draft amendments to existing UN Regulations submitted by GRSG

Proposal for the 07 series of amendments to UN Regulation No. 46 (Devices for Indirect Vision)

Submitted by the Working Party on General Safety Provisions*

The text reproduced below was adopted by the Working Party on General Safety Provisions (GRSG) at its 129th session (ECE/TRANS/WP.29/GRSG/108, paragraph 10). It is based on GRSG-129-44-Rev.1 as reproduced by annex IV to the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration at their November 2025 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2025 as outlined in proposed programme budget for 2025 (A/79/6 (Sect. 20), table 20.6), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

Paragraph 1.1., amend to read:

"1.1. This Regulation applies:

(a) To compulsory and optional devices for indirect vision, set out in the table under paragraph 15.2.1.1.1. of this Regulation for vehicles of category M and N[1] and to compulsory and optional devices for indirect vision mentioned in paragraphs 15.2.1.1.3. and 15.2.1.1.4. of this Regulation for vehicles of category L[1] with bodywork at least partly enclosing the driver;

(b) To the installation of devices for indirect visions on vehicles of categories M and N and on vehicles of category L[1] with bodywork at least partly enclosing the driver~~.~~;

(c) To the installation of surveillance mirrors and surveillance camera-monitor-recording devices with regard to the requirements of paragraphs 15.2.1.2. and 16.3. respectively of this Regulation as applicable. These devices do not need to fulfil any other technical requirements of this Regulation."

Paragraph 1.2., amend to read:

"1.2. This Regulation does not apply to devices other than those prescribed under paragraph 1.1.~~–~~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 ≤ 7.5 t. "

Paragraph 2.2., amend to read:

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

(a) Design of the device inclusive, if pertinent, the attachment to the bodywork;

(b) In the case of mirrors, the class, the shape, the dimensions and radius of curvature of the mirror's reflecting surface;

(c) In the case of camera-monitor systems, the class, the field of view, the magnification and resolution.

(d) If the device for indirect vision fulfils the requirements for different classes at the same time, it may be approved as one type of device for indirect vision with just one approval number in combination with additional symbols for the specific classes of the devices for indirect vision (e.g. V+VI) covered by the approval."

Paragraph 2.3., amend to read:

"2.3. "*Surveillance camera-monitor-recording device*" means a camera and either a monitor or recording equipment, other than the camera-monitor system defined in paragraph 2.1.2. above, which can be fitted to the inside or outside of the vehicle in order to provide fields of vision other than those specified in paragraph 15.2.4. of this Regulation or to provide a security system within or around the vehicle.

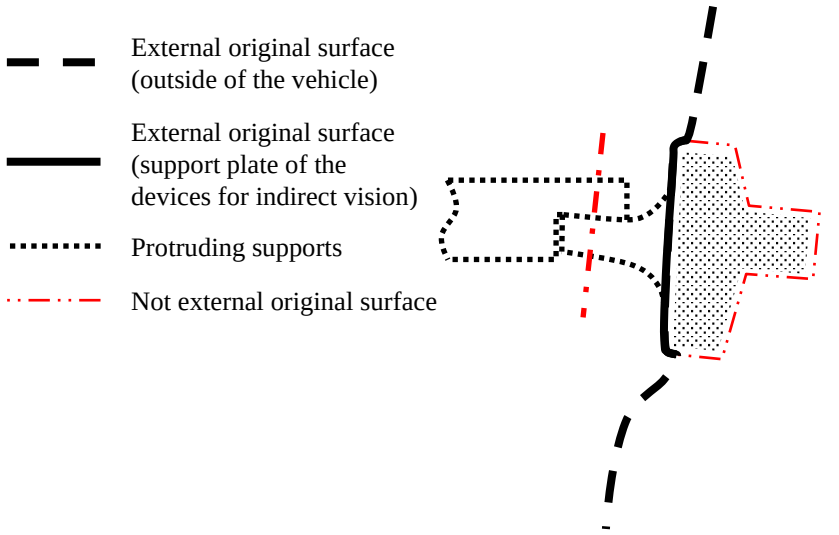
Devices mandated by other UN Regulations are not seen as a surveillance camera-monitor-recording device, if not explicitly mentioned in the respective other Regulation."

[1] As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.7. - https://unece.org/transport/standards/transport/vehicle-regulations-wp29/resolutions

Paragraph 2.7., amend to read:

"2.7. "*External original surface*" means the outside of the vehicle including the bonnet, the lid of the luggage compartment, the doors, the wings (fender), the roof, the lighting and light-signalling devices, the visible strengthening components, the support plate of devices for indirect vision and additional external original design surfaces defined by the manufacturer excluding protruding supports for devices of indirect vision.

Figure 1a



"

Figures 1 (former), renumber as figures 1b to 1c

Paragraph 5.4.3., amend to read:

"5.4.3. Additional symbol(s) I, II, III, IV, V, VI or VII specifying the class to which the type of device for indirect vision belongs. The additional symbols shall be placed in any convenient position in the vicinity of the circle containing the letter "E"."

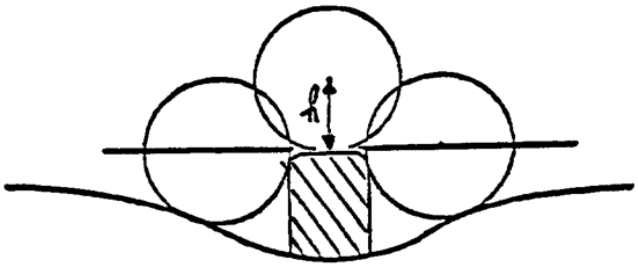
Insert new paragraph 6.1.1.3.1., to read:

"6.1.1.3.1. In the case of a Class I mirror, the requirement of paragraph 6.1.1.3. does not apply to the backside of the mirror. "

Paragraph 6.1.1.4.2., amend to read:

"6.1.1.4.2. If the dimension of the projection of a component which is mounted on a surface other than convex cannot be determined by simple measurement, it shall be determined by the maximum variation of the distance of the centre of a 100 mm diameter sphere from the nominal line of the panel when the sphere is moved over and is in constant contact with that component.
Figure 1b shows an example of the use of this procedure.

Figure 1**b**
Example for the Measurement by Maximum Variation



"

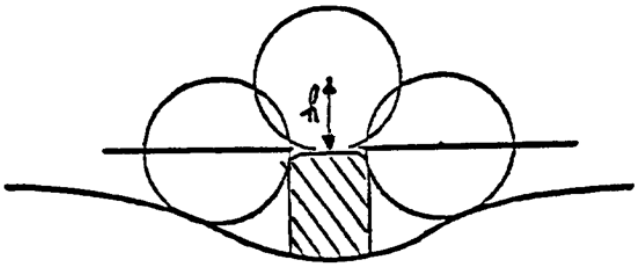
Paragraph 6.1.1.6., amend to read:

"6.1.1.6. The device for the attachment of mirrors to the vehicle shall be so designed that a cylinder with a 70 mm radius (50 mm in the case of an L-category vehicle), having as its axis the axis, or one of the axes, of pivot or rotation which ensures deflection of the mirror in the direction of impact concerned, passes through at least part of the external original surface as defined in paragraph 2.7. "

Paragraph 6.2.2.1.2.2., amend to read:

"6.2.2.1.2.2. If the dimension of the projection of a component which is mounted on a surface other than convex cannot be determined by simple measurement, it shall be determined by the maximum variation of the distance of the centre of a 100 mm diameter sphere from the nominal line of the panel when the sphere is moved over and is in constant contact with that component.
Figure 1b shows an example of the use of this procedure.

Figure 1b
Example for the Measurement by Maximum Variation



"

Paragraph 6.3.2., amend to read:

"6.3.2. Impact test

The test according to this paragraph is not to be carried out for

(a) exterior devices not projecting beyond the overall width and length of the vehicle and providing a frontal deflecting area of an angle not more than 45° measured in relation to the longitudinal median plane of the vehicle, or

(b) devices not protruding more than 100 mm measured at the attachment point beyond the circumscribing external original surface of the vehicle"

Paragraph 6.3.2.1.1., amend to read:

"6.3.2.1.1. The test rig consists of a pendulum capable of swinging about two horizontal axes at right angles to each other, one of which is perpendicular to the plane containing the "release" trajectory of the pendulum.

The end of the pendulum comprises a hammer formed by a rigid sphere with a diameter of 165 ± 1 mm, and at least on the impact side a 5 ± 1 mm thick rubber covering of Shore A hardness 50.

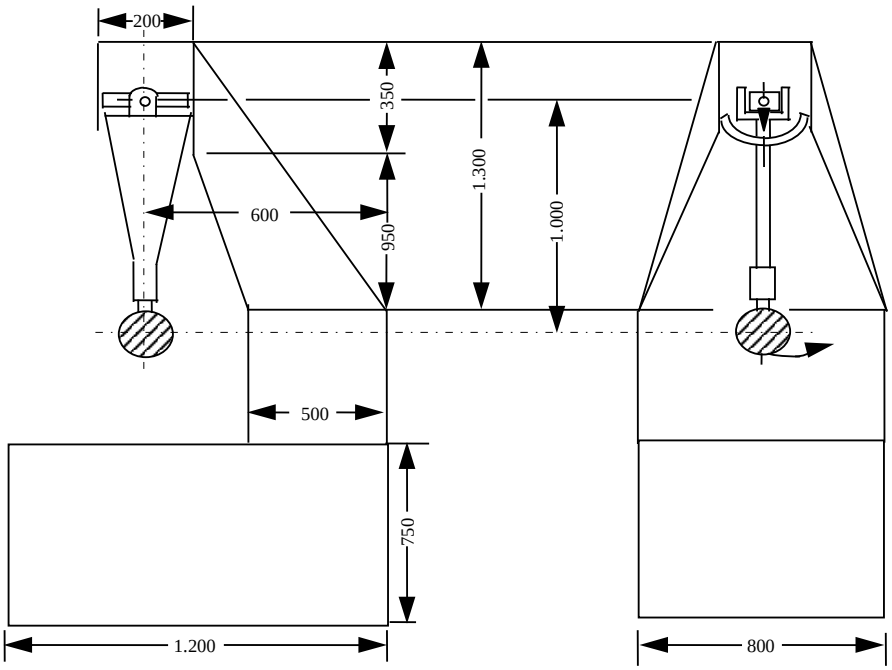
The end of the hammer may be formed by any other rigid shape having at least on the impact side a spherical shape and a 5 ± 1 mm thick rubber covering of Shore A hardness 50, if the equivalence of this shape is demonstrated through a mathematical model, to the satisfaction of the Type Approval Authority.

A device is provided which permits determination of the maximum angle assumed by the arm in the plane of release.

A support firmly fixed to the structure of the pendulum serves to hold the specimens in compliance with the impact requirements specified in paragraph 6.3.2.2.7. below.

Figure 1c below gives the dimensions (in mm) of the test rig and the special design specifications:

Figure 1c



"

Paragraph 6.3.2.2.5., amend to read:

"6.3.2.2.5. When, under the conditions governing adjustment laid down in paragraphs 6.3.2.2.1. and 6.3.2.2.2. above parts of the device for indirect vision limit the return of the hammer before and after the impact, the point of impact shall be displaced through the centre of the reflecting surface, in a direction perpendicular to the axis of rotation or pivoting in question.

The displacement shall be no greater than is strictly necessary for the execution of the test. The necessary displacement shall be agreed upon by the Type Approval Authority or Technical Service; it shall be limited in such a way that:

(a) Either the sphere delimiting the hammer remains at least tangential to the cylinder as defined in paragraph 6.1.1.6.;

(b) Or, in the case of mirrors, the point of contact with the hammer is located on the reflecting surface at least 10 mm from the periphery of the reflecting surface"

Paragraph 15.2.1.1.3., amend to read:

"15.2.1.1.3. Rear-view mirrors required for L-category vehicles with body work

Category of vehicle	*Rear-view Class I*	*Main rear-view Classes III and VII*
L category motor vehicles fitted with bodywork which partly or wholly encloses the driver	1[1]	1, if there is a Class I rear-view mirror; 2, if there is not a Class I rear-view mirror

[1] No rear-view mirror Class I is required if the visibility conditions referred to in paragraph 15.2.~~5.~~**4.1.** below cannot be met. In this case two Class III or VII rear-view mirrors are required, one giving the view on the left and one giving the view on the right hand side of the vehicle.

Where a single Class III or VII rear-view mirror is fitted this shall be located on the left hand side of the vehicle in those countries where the traffic drives on the right and on the right hand side of the vehicle in those countries where the traffic drives on the left."

Paragraph 15.2.1.2., amend to read:

"15.2.1.2. Exterior surveillance mirrors shall be mounted at least 2 m above the ground when the vehicle is under a load corresponding to its maximum technical permissible mass or shall be fully integrated in a housing including Class II or III mirror(s) which is (are) type approved to this Regulation."

Paragraph 15.2.4.2., amend to read:

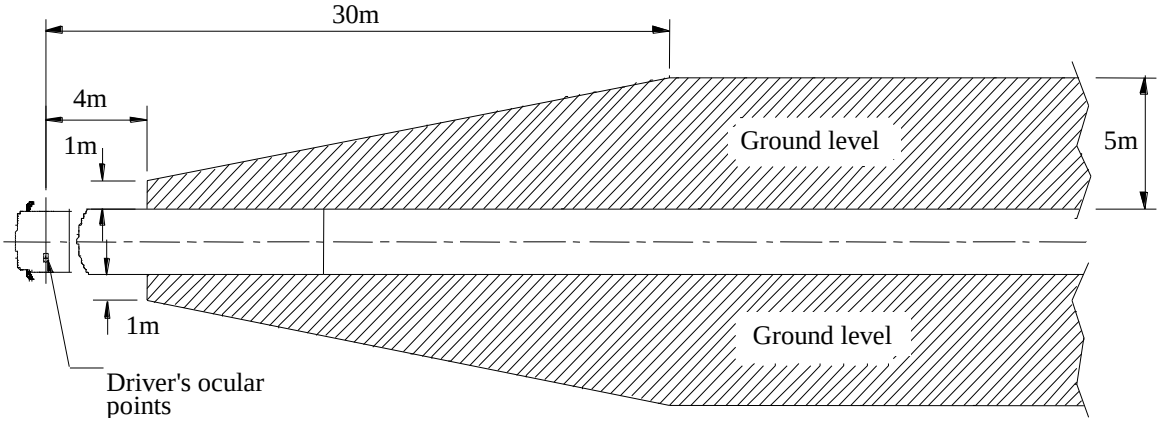
"15.2.4.2. Class II main rear-view device

15.2.4.2.1. Main rear-view device on the driver’s side

The field of vision shall be such that the driver can see at least a 5 m wide, flat, horizontal portion of the road, which is bounded by a plane which is parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle on the driver’s side of the vehicle and extends from 30 m behind the driver’s ocular points to the horizon.

In addition, the road shall be visible to the driver 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, while linearly increasing up to a width of 5 m wide at the point 30 m behind the vertical plane passing through the driver's ocular points (see Figure 5).

Figure 5
Class II fields of vision



15.2.4.2.2. Main rear-view device on the passenger's side

The field of vision shall be such that the driver can see at least a 5 m wide, flat, horizontal portion of the road, which is bounded on the passenger's side by a plane parallel to the median longitudinal vertical plane of the vehicle and passing through the outermost point of the vehicle on the passenger's side and which extends from 30 m behind the driver's ocular points to the horizon.

In addition, the road shall be visible to the driver 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, while linearly increasing up to a width of 5 m wide at the point 30 m behind the vertical plane passing through the driver's ocular points (see Figure 5)."

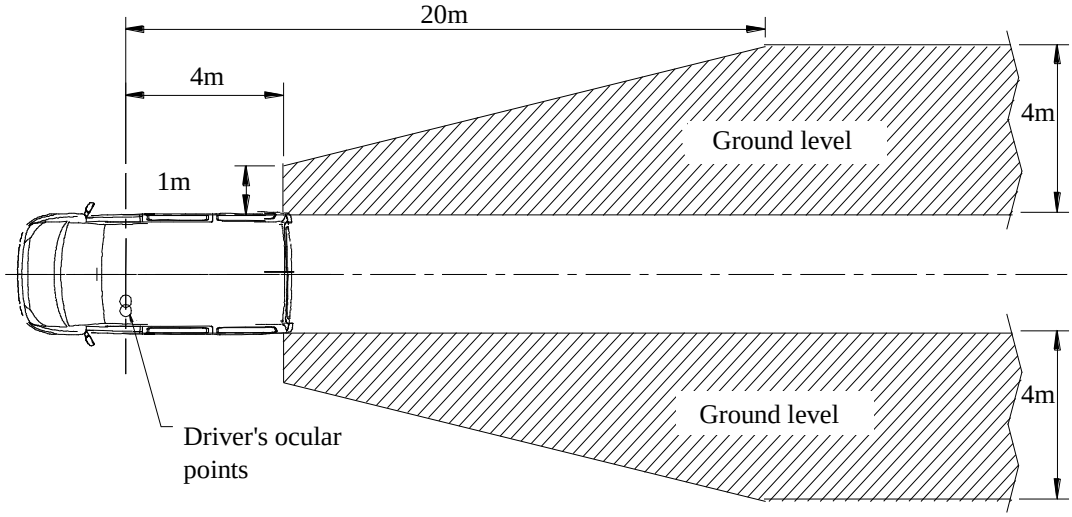
Paragraph 15.2.4.3., amend to read:

"15.2.4.3. Class III main rear-view device

15.2.4.3.1. Main rear-view device on the driver's side

The field of vision shall be such that the driver can see at least a 4 m wide, flat, horizontal portion of the road, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle on the driver's side of the vehicle and extends from 20 m behind the driver's ocular points to the horizon (see Figure 6).

Figure 6
Class III fields of vision



In addition, the road shall be visible to the driver 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, while linearly increasing up to a width of 4 m wide at the point 20 m behind the vertical plane passing through the driver's ocular points.

15.2.4.3.2. Main rear-view device on the passenger's side

The field of vision shall be such that the driver can see at least a 4 m wide flat, horizontal portion of the road which is bounded by a plane parallel to the median longitudinal vertical plane passing through the outermost point of the vehicle on the passenger's side and which extends from 20 m behind the driver's ocular points to the horizon (see Figure 6).

In addition, the road shall be visible to the driver 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, while linearly increasing up to a width of 4 m wide at the point 20 m behind the vertical plane passing through the driver's ocular points."

Paragraph 15.2.4.4., amend to read:

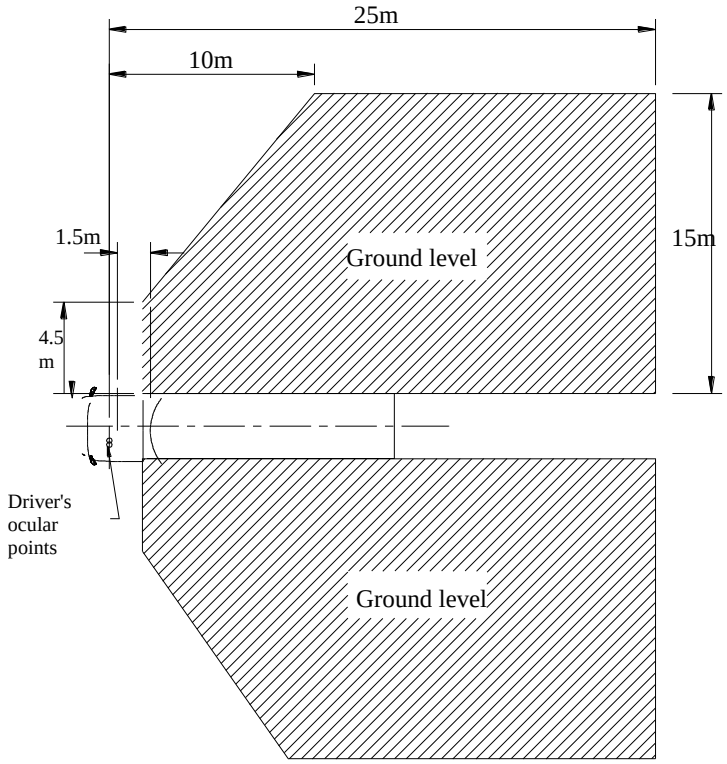
"15.2.4.4. Class IV wide-angle view device

15.2.4.4.1. Wide-angle view device on the driver's side

The field of vision shall be such that the driver can see at least a 15 m wide, flat, horizontal portion of the road, which is bounded by a plane parallel to the median longitudinal vertical plane of the vehicle and passing through the outermost point of the vehicle on the driver's side and which extends from at least 10 m to 25 m behind the driver's ocular points.

In addition, the road shall be visible to the driver over a width of 4.5 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 1.5 m behind the vertical plane passing through the driver's ocular points, while linearly increasing up to a width of 15 m wide at the point 10 m behind the vertical plane passing through the driver's ocular points (see Figure 7).

Figure 7
Class IV fields of vision



15.2.4.4.2. Wide-angle view device on the passenger's side

The field of vision shall be such that the driver can see at least a 15 m wide, flat, horizontal portion of the road, which is bounded by a plane parallel to the median longitudinal vertical plane of the vehicle and passing through the outermost point of the vehicle on the passenger's side and which extends from at least 10 m to 25 m behind the driver's ocular points.

In addition, the road shall be visible to the driver over a width of 4.5 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 1.5 m behind the vertical plane passing through the driver's ocular points, while linearly increasing up to a width of 15 m wide at the point 10 m behind the vertical plane passing through the driver's ocular points (see Figure 7)."

Insert new paragraph 15.2.4.9.3., to read:

"15.2.4.9.3. The reflective surfaces must be sufficiently large to accommodate the full fields of vision specified above, i.e. obstructions up to the percentages mentioned above may not be caused by insufficient reflective surface sizes."

Insert new paragraph 16.1.1.3.1., to read:

"16.1.1.3.1. Safety-Related Rearward Vision Information

Safety-related rearward vision information refers to information that directly enhances the driver's ability to identify, assess, and respond to potential hazards or obstacles in the rearward field of vision. This includes, but is not limited to:

(a) Hazard alerts highlighting vehicles, cyclists, or pedestrians;

(b) Distance lines or markers to highlight the distance to other vehicles;

(c) Parking guidance lines.

Any additional information proposed by the vehicle manufacturer as safety-related rearward vision information shall be evaluated and approved by the Technical Service and Type Approval Authority.

Indicators like blind spot monitoring indicators as described in UN Regulation No. 151, side indicators, temperature warnings are not considered as safety-related rearward vision information."

Paragraph 16.1.2., amend to read:

"16.1.2. Operating readiness (System availability)

Non-operation of the system (e.g. CMS failure as defined by the manufacturer in the explanation of the warning strategy and safety concept according to paragraph 2.3.1. (e) of Annex 12 or CMS in a folded position on driver's request) shall be recognizable to the driver and indicated by e.g. warning indication, display information, absence of status indicator. The information for the driver shall be explained in the operator's manual."

Paragraph 16.1.3.1., amend to read:

"16.1.3.1. Magnification factor

The minimum and the average magnification factors of the CMS, in both horizontal and vertical directions shall not be lower than the magnification factors indicated below:

Magnification limit with two digits after the decimal point: round the measured value to the nearest hundredth;

Magnification limit with three digits after the decimal point: round the measured value to the nearest thousandth.

Examples:

0,255 -> 0,26

0,0154 -> 0,015"

Delete paragraph 16.2.5.

Insert new paragraphs 16.3. to 16.3.5., to read:

"16.3. Surveillance Camera-Monitor-Recording Devices

16.3.1. Exterior surveillance cameras shall be mounted at least 2 m above the ground when the vehicle is under a load corresponding to its maximum technical permissible mass.

16.3.2. Notwithstanding the provisions of paragraph 16.3.1., exterior surveillance cameras mounted below 2 m from the ground when the vehicle is under a load corresponding to its maximum technical permissible mass shall not project more than 50 mm beyond the overall width of the vehicle measured without this device and shall have radii of curvature according to paragraphs 6.2.2.1.1. to 6.2.2.1.5. or shall be integrated in a housing of a Class II or III device for indirect vision approved under this Regulation.

16.3.2.1. In the case of vehicles of category N, the provisions of paragraph 16.3.2. only apply to a surveillance camera-monitor recording device mounted on the external surface according to paragraph 2.1. as defined in UN Regulation No. 61.

16.3.3. Notwithstanding the provisions in paragraph 16.3.1. in case of vehicles of category M2 and M3 the provisions of paragraph 16.3.2. do not apply to surveillance camera-monitor recording devices mounted on the rear wall of the vehicle.

16.3.4. Monitors of a surveillance camera-monitor-recording device shall fulfil the provisions of paragraphs 6.2.2. to 6.2.2.1.1. and 6.2.2.1.4."

Insert new paragraph 22.33. and consequent subparagraphs, to read:

"22.33. Transitional Provisions of the 07 Series of Amendments

"22.33.1. As from the official date of entry into force of the 07 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 07 series of amendments.

22.33.2. As from 1 September 2027, Contracting Parties applying this Regulation shall not be obliged to accept type approvals to any of the preceding series of amendments, first issued after 1 September 2027.

22.33.3. Until 1 September 2029, Contracting Parties applying this Regulation shall accept type approvals to the 06 series of amendments, first issued before 1 September 2027.

22.33.4. As from 1 September 2029, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to any of the preceding series of amendments to this Regulation.

22.33.5. Notwithstanding paragraphs 22.33.3. and 22.33.4., Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the 04, 05 and 06 series of amendments to this Regulation, for the vehicles and devices for indirect vision which are not affected by the changes introduced by the 07 series of amendments.

22.33.6. Contracting Parties applying this Regulation may grant type approvals according to any of the preceding series of amendments to this Regulation.

22.33.7. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any of the preceding series of amendments to this Regulation."

Annex 1, paragraph 9.1.1., amend to read:

"9.1.1. In the case of camera-monitor systems of Classes V and VI, the class**(es)**, the detection distance**(s)** [mm], contrast**(s)**, luminance range**(s)**, glare correction**(s)**, display performance**(s)** (black and white/colour) image repetition frequency**(s)**, luminance reach of the monitor**(s)**: ....."

Annex 1, item 9.1.2., amend to read:

"9.1.2. In the case of camera-monitor systems of Classes I to IV, the class**(es)**, field**(s)** of view, magnification**(s)** and resolution**(s)**: ……"

Insert new paragraphs 12.1.3. to 12.1.4. in Annex 2, to read:

"12.1.3. Surveillance Mirrors .....

12.1.3.1. Drawing(s) showing the position of the surveillance mirror relative to the vehicle structure: .....

12.1.3.2. Details of the method of attachment including that part of the vehicle structure to which it is attached: .....

12.1.3.3. Optional equipment which may affect the rearward field of vision: .....

12.1.3.4. A brief description of the electronic components (if any) of the adjustment device: .....

12.1.4. surveillance camera-monitor-recording devices: .....

12.1.4.1. Sufficiently detailed drawings with the installation instructions: .....

12.1.4.2. Drawing(s)/photograph(s) showing the position of the camera(s) relative to the vehicle structure: .....

12.1.4.3. Drawing(s)/photograph(s) showing the arrangement of the monitor(s) including surrounding interior parts: .....

12.1.4.4. Details of the method of attachment of the camera-monitor device(s) including that part of the vehicle structure to which it is attached: .....

12.1.4.5. Optional equipment which may affect the rearward field of vision: .....

12.1.4.6. A brief description of the electronic components (if any) of the adjustment device: ..... "

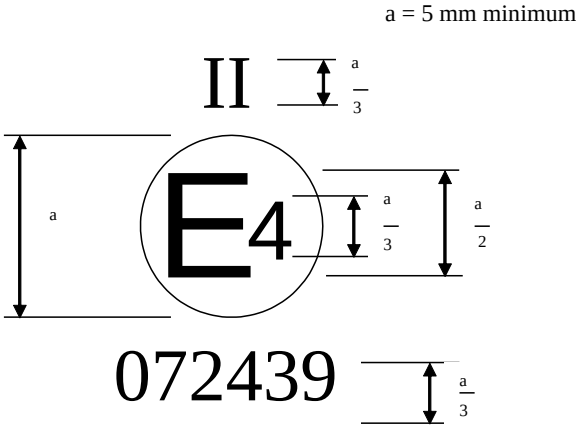
Annex 5, amend to read:

"Annex 5

Arrangement of Approval Mark of a Device for Indirect Vision

(See paragraph 5.4. of the Regulation)

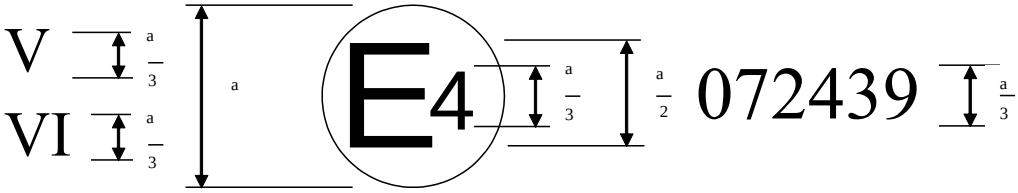
Example 1



The above approval mark affixed to a device for indirect vision indicates that the device is a main rear-view device, of Class II, which has been approved in the Kingdom of the Netherlands (E 4) pursuant to Regulation No. 46 and under approval number 072439. The first two digits of the approval number indicate that Regulation No. 46 already included the ~~05~~ 07 series of amendments when the approval was granted.

Note: The approval number and the additional symbol shall be placed close to the circle and either above or below the "E" or to the left or right of that letter. The digits of the approval number and the additional symbols may be on the same side of the "E" or one on one side and the other on the other side and point in the same direction. The additional symbol shall be directly next or opposite to the approval number. The use of Roman numerals as approval numbers shall be avoided so as to prevent any confusion with other symbols.

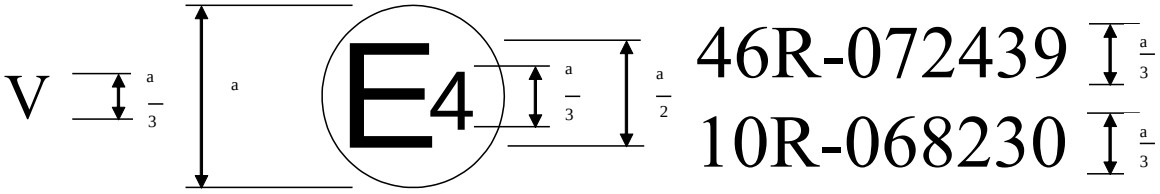
Example 2
One Approval Number for Two Classes



The above approval mark affixed to a device for indirect vision indicates that the device is a close-proximity view device, of Class V, and a front-view device, of Class VI, which has been approved in the Kingdom of the Netherlands (E 4) pursuant to Regulation No. 46 and under approval number 072439. The first two digits of the approval number indicate that Regulation No. 46 already included the 07 series of amendments when the approval was granted.

Note: The approval number and the additional symbol(s) shall be placed close to the circle and on the same side or one to the left and one to the right of that letter. The digits of the approval number and the additional symbols shall point in the same direction. The use of Roman numerals as approval numbers shall be avoided so as to prevent any confusion with other symbols.

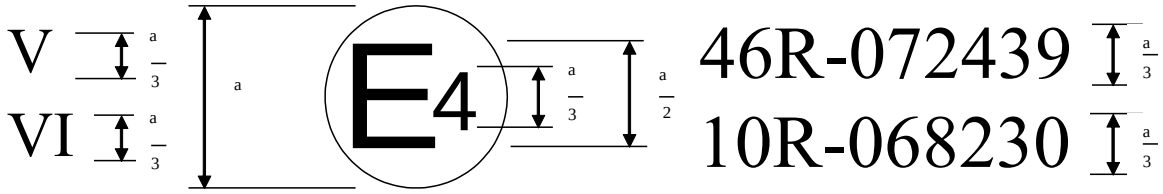
Example 3
Combined Approval Mark for UN Regulation No. 46 and UN Regulation No. 10



The above approval mark affixed to a device for indirect vision indicates that the device is a close-proximity view device, of Class V, which has been approved in the Kingdom of the Netherlands (E 4) pursuant to Regulation No. 46 and under approval number 072439 and pursuant to Regulation No. 10 and under approval number 068230. The first two digits of the approval number indicate that Regulation No. 46 already included the 07 series of amendments and Regulation No. 10 already included the 06 series of amendments when the approval was granted.

Note: The approval numbers and the additional symbol shall be placed close to the circle and either above or below the "E" or to the left or right of that letter. The digits of the approval number and the additional symbols may be on the same side of the "E" and point in the same direction. The use of Roman numerals as approval numbers shall be avoided so as to prevent any confusion with other symbols.

Example 4
Combined Approval Mark for UN Regulation No. 46 (One Number for Two Classes) and UN Regulation No. 10



The above approval mark affixed to a device for indirect vision indicates that the device is a close-proximity view device of Class V, and a front-view device of Class VI, which has been approved in the Kingdom of the Netherlands (E 4) pursuant to Regulation No. 46 and under approval number 07243946 and pursuant to Regulation No. 10 and under approval number 068230. The first two digits of the approval number indicate that Regulation No. 46 already included the 07 series of amendments and Regulation No. 10 already included the 06 series of amendments when the approval was granted.

Note: The approval numbers and the additional symbols shall be placed close to the circle and on one side or one to the left and one to the right of the "E" or on the same side of the letter. The digits of the approval number and the additional symbols shall point in the same direction. The additional symbols shall be directly or opposite to the approval numbers. The use of Roman numerals as approval numbers shall be avoided so as to prevent any confusion with other symbols."

Insert new paragraph 3. *in Annex 7*, to read:

"3. Equivalent Procedures

3.1. Alternative tests may be permitted at the discretion of the Type Approval Authority provided equivalence can be demonstrated. A report shall be attached to the approval documentation describing the method used and the results obtained or the reason for not carrying out the test.

3.2. Responsibility for demonstrating the equivalence of the alternative method shall rest with the manufacturer or his agent wishing to use such a method."