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Item … of the provisional agenda

REGULATION No. 46
(Devices for indirect vision)

Proposal for draft amendments to Regulation No. 46

Submitted by the informal group on Camera-Monitor Systems */

The text reproduced below was prepared by the informal group on Camera-Monitor Systems in order to permit the use of a camera monitor systems instead of all compulsory and optional mirrors. The modifications to the current text of the Regulation are marked in **bold** or ~~strikethrough~~ characters.

*/ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

A. PROPOSALS

Paragraph 2.1 amend to read:

2.1. "Devices for indirect vision" means devices **intended to give a clear view to the rear, side or front of the vehicle within the fields of vision defined in paragraph 15.2.4.**~~to observe the traffic area adjacent to the vehicle which cannot be observed by direct vision~~. These can be ~~conventional~~ mirrors, camera-monitors or other devices able to present information about the indirect field of vision to the driver.

Justification: Clarification and adjustment with the text of para. 2.1.1; field of visions are sufficiently defined in para. 15.2.4

Paragraph 2.1.1. amend to read:

2.1.1 "Mirror" means a~~ny~~ device, excluding devices such as periscopes, intended to give a clear view to the rear, side or front of the vehicle within the fields of vision defined in paragraph 15.2.4. **by means of a reflective surface**.

Justification: for clarification that a mirror is only a device with a reflective surface for rendering the field of vision and excludes other devices.

Paragraph 2.1.1.1 and 2.1.1.2 amend to read:

2.1.1.1. "Interior mirror" means a device as defined in paragraph ~~2.1.~~**2.1.1.**, which can be fitted in the passenger compartment of a vehicle.

2.1.1.2. "Exterior mirror" means a device as defined in paragraph ~~2.1.~~**2.1.1.**, which can be mounted on the external surface of a vehicle.

Justification: this is a sub paragraph of 2.1.1 for mirrors and not of the general definition of device for indirect vision of paragraph 2.1

Paragraph 2.1.1.13 amend to read:

2.1.1.13. "Class of ~~mirror~~ **device for indirect vision**" means all devices having one or more common characteristics or functions. They are classified as follows:

- Class I: "~~Interior~~ **Central** rear-view ~~mirror~~ **device for indirect vision**", giving the field of vision defined in paragraph 15.2.4.1.
- Class II and III: "Main ~~exterior~~ rear-view **device for indirect vision** ~~mirror~~ ", giving the fields of vision defined in paragraphs 15.2.4.2. and 15.2.4.3.
- Class IV: "Wide-angle view **device for indirect vision** ~~exterior mirror~~ ", giving the field of vision defined in paragraph 15.2.4.4.
- Class V: "Close-proximity view **device for indirect vision** ~~exterior mirror~~ ", giving the field of vision defined in paragraph 15.2.4.5.
- Class VI: "Front view **device for indirect vision** ~~mirror~~ ", giving the field

of vision defined in paragraph 15.2.4.6.

- Class VII: ~~Mirrors~~ Devices for indirect vision intended for L category vehicles with bodywork **giving the field of vision defined in paragraph 15.2.4.7**.

Justification: the mounting of a devices for indirect vision in case of a camera-moniotor system is not by definition interior or exterior the vehicle.
Note: numbering as sub paragraph of 2.1.1. is not logical; to be verified by HJ/Brigade (see also 2.1.3)

Insert a new paragraph 2.1.1.14 reading:

2.1.1.14. **'original camera-monitor device for indirect vision` means a camera-monitor device for indirect vision of the type fitted to the vehicle at the time of type-approval or extension of type-approval.**

Justification: this definition is needed because of amended provisions on markings in paragraph 4.2 and 5.4 where no marking is needed for original devices for indirect vision.

Paragraph 2.1.2. amend to read:

2.1.2. "Camera-monitor device ~~for indirect vision~~" means a device as defined in paragraph 2.1., where the field of vision is obtained by means of a camera-monitor combination as defined in paragraphs 2.1.2.1. and 2.1.2.2.

Justification: repetition of the words “for indirect vision” is not needed as that is already included in the definition of 2.1.

Paragraph 2.1.3. amend to read:

2.1.3. "Other devices for indirect vision" means devices as defined in paragraph 2.1., where the field of vision is not obtained by means of a mirror or a camera-monitor ~~type~~ device ~~for indirect vision~~.

Justification: a camera-monitor device is already defined as for indirect vision.

Note by the chairman:
With this argumentation I don’t understand why we introduced the wording “ for indirect vision” in the class definitions of paragraph 2.1.1.13. If that repetition is not needed then we could use the following wording in 2.1.1.13:
Class I: " **Device** for central rear-view", giving the field of vision defined in paragraph 15.2.4.1.
Class II and III: "**Device** for main rear-view, giving …. etc

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:

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

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

(c) in case of camera-monitor devices **the class** ~~the detection distance and the range of vision.~~ "

Note: CMS specifications and performance requirements should be defined by ISO for class I to IV and VII

Justification: the type should be defined by the class only.

Paragraph 2.1.2.6 deleted footnote 2/ and the text amend to read:

2.1.2.6. "Critical object" means a ~~circular~~ **cilindrical** object**. For devices for class V and VI it shall be 50 cm high and** with a diameter D_0 = ~~0.8~~ **0.3** m. ~~2/~~ **For classes I to IV and VII the dimensions shall be according ISO ……..**

Justification: Dimensions taken from 15.2.4.6.1. while the dimensions for other classes have to be considered by ISO.

Paragraph 3.3 to 3.3.2., amend to read:

3.3 For each type of device for indirect vision the application shall be accompanied by one sample of ~~all~~ the parts:

3.3.1. in case of mirrors, ~~four~~ **three** samples **shall be provided**~~: three for use in the tests and one to be retained by the laboratory for any further examination that might subsequently prove necessary~~.

3.3.2. Additional specimens may be called for at the request of the laboratory.

~~3.3.2. in case of other devices for indirect vision: one sample of all the parts.~~

Justification: Simplification of the text; in general only one sample is needed, but in case of mirrors three; the retaining of one sample by the laboratory is not needed.

~~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 m) at 40 m distance would be equal to a pedestrian (D = 0.5 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 4.2., amend to read:

4.2 Every device **for indirect vision, with the exception of original Camera-monitor devices for indirect vision**, shall possess **on at least one of the main components** ~~on its protective housing~~ a space large enough to accommodate the approval mark, which ~~must~~ **shall** be legible when the device has been mounted on the vehicle; this space shall be shown on the drawings referred to in Annex 1. **Other components of the device shall bear the name of the manufacturer and a means of identification.**"

Justification: The identification of original system can be verified by means of the vehicle type approval data so no separate marking is needed. Having regard the limited space on the components for the approval marking it should be sufficient that only one main component has that mark; the identification of the other components can be verified by means of the system approval data.

Insert a new paragraph 4.3, reading:

4.3 In case of limited space for the approval mark(s) other means of identification that tie it to the approval number mark shall be provided.

Paragraph 5.4. amend to read:

5.4. There shall be affixed **on at least one of the main components**, conspicuously and in the space referred to in paragraph 4.2. above, to every device for indirect vision**, with the exception of original Camera-monitor devices for indirect vision**, conforming to a type approved under this Regulation, in addition to the mark prescribed in paragraph 4.1., an international approval mark consisting of:

5.4.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval; [3/]

5.4.2. An approval number;

5.4.3. ~~An additional~~ **Additional** symbol**(s)** I or/**and** II or/**and** III or/**and** IV or/**and** V or/**and** VI or/and VII, specifying the class to which the type of the ~~mirror~~ devices for indirect vision belongs ~~or the symbol S in case of any device for indirect vision other than a mirror. The additional symbol shall be placed in any convenient position in the vicinity of the circle containing the letter "E"~~

Justification: consequence of amended paragraph 4.2

Brigade will do suggestions for improvement of this paragraph 5.4.

Note by the chairman:
The consequence of the amentment of 5.4.3. above will be that the word `symbol` in paragraph

5.5 should be plural. Suggestion:

Paragraph 5.5 amend to read:

5.5 The approval mark and the additional symbol**(s)** shall be clearly legible and be indelible.

Paragraph 6.1.2.1.1 amend to read:

6.1.2.1.1. ~~Interior~~ **Central** rear view **interior** mirrors (Class I)

The dimensions of the reflecting surface must be such that it is possible to inscribe thereon a rectangle one side of which is 40 mm and the other 'a' mm in length, where

$$a = 150\,\text{mm} \times \frac{1}{1 + \frac{1000}{r}}$$

and r is the radius of curvature.

Justification: alignment with the class definitions of 2.1.1.13. where the terminology "central rear view" is used

Paragraph 6.1.2.1.2. amend to read:

6.1.2.1.2. Main ~~exterior~~ rear-view **exterior** mirrors (Class II and III)

Justification: alignment with the class definitions of 2.1.1.13. where the terminology "main rear view" is used.

Paragraph 6.1.2.1.3. amend to read:

6.1.2.1.3. Wide-angle ~~exterior~~ **view** exterior mirrors (Class IV)

The contours of the reflecting surface must be of simple geometric form and its dimensions such that it provides, if necessary in conjunction with a Class II exterior mirror, the field of vision specified in paragraph 15.2.4.4.

Justification: alignment with the class definitions of 2.1.1.13. where the terminology "wide angle view" is used.

6.1.2.1.4. Close-proximity ~~exterior~~ **view exterior** mirrors (Class V)
The contours of the reflecting surface must be of simple geometric form and its dimensions such that the mirror provides the field of vision specified in paragraph 15.2.4.5.

Justification: alignment with the class definitions of 2.1.1.13. where the terminology "close proximity view" is used.

Paragraph 6.1.2.1.5. amend to read:

6.1.2.1.5. Front **view** mirrors (Class VI)
The contours of the reflecting surface must be of simple geometric form and its dimensions such that the mirror provides the field of vision specified in paragraph 15.2.4.6.

Justification: alignment with the class definitions of 2.1.1.13. where the terminology "front view" is used.

Paragraph 6.2.2.2 amend to read:

6.2.2 CAMERA-MONITOR DEVICES ~~FOR INDIRECT VISION~~

Justification: A camera monitor system is by definition for indirect vision.

Paragraph 6.2.2.1.1. amend to read:

6.2.2.1.1. When the camera-monitor device ~~for indirect vision~~ is mounted **in the intended installation position**, all parts, irrespective of the adjustment position of the device which are in potential, static contact with a sphere either 165 mm in diameter in the case of a monitor or 100 mm in diameter in the case of a camera, must have a radius of curvature "c" of not less than 2.5 mm**. This does not apply to exterior parts of such devices which are installed 2.00 m or more above the ground.**

Justification: the original wording could only be checked as part of the installation provisions.

Paragraph 6.2.2.4. amend to read:

6.2.2.2.4. The measurements for the luminance contrast **of the monitor** shall be carried out according to ISO 15008: 2003.

Justification: clarification that the luminance contrast shall only be measured for the monitor.

Paragraph 6.2.2.5. amend to read:

6.2.2.2.5 The camera-monitor device of class I to IV and VII shall meet the provisions of ISO-xxxx considering the following items, where applicable:

~~**- failure of the system,**~~
~~**- wireless technology, if applicable,**~~
~~**- night sight (minimum illumination level),**~~
~~**- adaptation of the light intensity during the night,**~~
~~**- colour of the display,**~~
~~**- split screen?**~~
~~**- detection of motion in real time, image moving artefacts,**~~
~~**- coatings for protection against rain, snow and dirt,**~~
~~**- sensibility of the system for rain,**~~
~~**- freezing risk due to processing of image information,**~~
~~**- image interpretation and**~~
~~**- other performance requirements.**~~

- CMS – Applications (Use Cases, especially "Use Classes I to IV and VII" and split screen use cases)
- Viewing conditions (viewing distance, viewing direction, viewing area…) related to the display monitor
- Illuminance conditions (in vehicle, outside vehicle, night, day)
- Representative and critical object(s) specification
- Special physical requirements (vibration, wind, rain, snow, ice, excessive temperatures…) and coatings for protection against rain, snow and dirt, sensitivity of the system for rain,
- Performance requirements on readability and legibility:
- Geometric proportions between the size of the real object and the size of the displayed object
- CMS-Performance requirements under different lighting conditions:
Display luminance and luminance contrast of the monitor under different illumination conditions, night sight (minimum illumination level), adaptation of the light intensity during the night,
Colour presentation and colour uniformity
- Image artefacts (blooming, smear, lens reflection, geometric distortion) and freezing risk due to processing of image information
- image interpretation,
Camera and display defects (Sensor pixel and display pixel defects)
- Temporal fidelity (flicker)
- Spatial instability (jitter)
- Detection of motion in real time, image moving artefacts, motion blur
- failure of the system and
- wireless technology issues.

Note by the chairman: text should be in line with the final document concerning the input to ISO

Brigade:
15.1.2
Delete “Mirrors and other”
Replace “…such a way that the mirror or other device does not…” with “such a way that they do not…”
Resulting in:
15.1.2. ~~Mirrors and other devices~~ **Devices** for indirect vision must be fitted in such a way that ~~the mirror or other device does not~~ **they do not** move so as significantly to change the field of vision as measured or vibrate to an extent which would cause the driver to misinterpret the nature of the image perceived.

Germany:
Paragraph 15.1.2., amend to read:

"15.1.2. ~~Mirrors and other devices~~ **Devices** for indirect vision must be fitted in such a way that the mirror or other device does not move so as significantly to change the field of vision as measured or vibrate to an extent which would cause the driver to misinterpret the nature of the image perceived. "
Suggestion for IGCMS: as proposed by Brigade; in case suggestion of Brigade is not supported, do we need to delete “mirror or other” on the second line as well?

Brigade:
15.2
Replace “MIRRORS” with “DEVICES FOR INDIRECT VISION”

Germany:
Paragraph 15.2., amend to read:

"15.2. ~~MIRRORS~~ **DEVICES FOR INDIRECT VISION** "
Suggestion for IGCMS: as proposed by TüV and Brigade.

Brigade:
15.2.1.1
Replace “Mirrors” with “Mirrors or cameras”
Resulting in:
15.2.1.1. Minimum number of compulsory mirrors **or cameras**
Suggestion for IGCMS: as proposed by Brigade.

Brigade:
15.2.1.1.1

Replace "….number on mandatory mirrors…." with "…..number of mandatory mirrors or cameras…."
Delete the last sentence (Where the presence…….mandatory base.)
Resulting in:

15.2.1.1.1. The fields of vision prescribed in paragraph 15.2.4. shall be obtained from the minimum number ~~on~~ **of** mandatory mirrors **or cameras** 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.~~

Note: There may in future be cases where devices for indirect vision other than mirrors are mandated for - without a corresponding requirement for a mirror; eg a rear view camera-monitor system on a truck or bus.

IGCMS:

15.2.1.1.1. The fields of vision prescribed in paragraph 15.2.4. shall be obtained from the minimum number ~~on~~ **of** mandatory mirrors **or cameras** 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.

Suggestion for IGCMS: as proposed by Brigade.

Brigade:
Table:
Delete the headings "Interior mirror" and "exterior mirrors"
Replace "Interior mirror" with "Central rear view"
Replace "Main mirror (large)" with "Main rear-view"
Replace "Main mirror (small)" with "Main rear-view"
Replace "Wide-angle mirror" with "Wide-angle view"
Replace "Close-proximity mirror" with "Close-proximity view"
Replace "Front mirror" with "Front view"
In squares M1 / Class III and N1 / Class III: Replace "mirrors" with "devices"
In square N2 / Class IV: Replace "mirror" with "device"
In each square in Class V and Class VI columns, prefix the bracketed text with "In the case of exterior mirrors,…"

(resulting in:)

Vehicle category	~~Interior mirror~~	~~Exterior mirrors~~				
	~~Interior mirror~~ **Central rear view** Class I	Main ~~mirror (large)~~ **rear view** Class II	Main ~~mirror (small)~~ **rear view** Class III	Wide-angle ~~mirror~~ **view** Class IV	Close-proximity ~~mirror~~ **view** Class V	Front ~~mirror~~ **view** Class VI
M_1	**Compulsory** Unless the vehicle is fitted with anything other than safety glazing material in the field of vision prescribed in paragraph 15.2.4.1.	Optional	**Compulsory** 1 on the driver's side and 1 on the passenger's side Class II ~~mirrors~~ **devices** 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 1 on the passenger's side (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Optional** (**In the case of exterior mirrors,** 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 1 on the passenger's side (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Optional** (**In the case of exterior mirrors,** must be fitted at least 2 m above the ground)

Vehicle category	~~Interior mirror~~	~~Exterior mirrors~~				
	~~Interior mirror~~ **Central rear view** Class I	Main ~~mirror (large)~~ **rear view** Class II	Main ~~mirror (small)~~ **rear view** Class III	Wide-angle ~~mirror~~ **view** Class IV	Close-proximity ~~mirror~~ **view** Class V	Front ~~mirror~~ **view** Class VI
M_3	**Optional** (no requirementsfor 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 1 on the passenger's side (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Optional** (**In the case of exterior mirrors,** must be fitted at least 2 m above the ground)
N_1	**Compulsory** Unless the vehicle is fitted with anything other than safety glazing material in the field of vision prescribed in paragraph 15.2.4.1.	**Optional**	**Compulsory** 1 on the driver's side and 1 on the passenger's side Class II ~~mirrors~~ **devices** 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 1 on the passenger's side (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Optional** (**In the case of exterior mirrors,** 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** For both sides if a Class V ~~mirror~~ **device** can be fitted **Optional** For both sides together if not	**Compulsory** (see paragraphs 15.2.2.7. and 15.2.4.5.5.) One on the passenger's side **Optional** One on the driver's side (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground). A tolerance of + 10 cm may be applied	**Optional** 1 front mirror (**In the case of exterior mirrors,** must be fitted at least 2 m above the ground)

Vehicle category	~~**Interior mirror**~~	~~**Exterior mirrors**~~				
	~~Interior mirror~~ **Central rear view** Class I	Main ~~mirror (large)~~ **rear view** Class II	Main ~~mirror (small)~~ **rear view** Class III	Wide-angle ~~mirror~~ **view** Class IV	Close-proximity ~~mirror~~ **view** Class V	Front ~~mirror~~ **view** Class VI
N_2 > 7,5 t	**Optional** (no requirementsfor 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 (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Compulsory,** see paragraph 15.2.1.1.2 1. front mirror (**In the case of exterior mirrors,** must be fitted at least 2 m above the ground)
N_3	**Optional** (no requirementsfor 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 (**In the case of exterior mirrors,** both must be fitted at least 2 m above the ground)	**Compulsory,** see paragraph 15.2.1.1.2 1. front mirror (**In the case of exterior mirrors,** must be fitted at least 2 m above the ground)

Suggestion for IGCMS: as proposed by Brigade.

Germany:
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 the relevant mirror or mirrors.

In case a camera/monitor device is used **to replace mirrors prescribed in paragraphs 15.2.4.5. and 15.2.4.6.**, the monitor must exclusively show:

(a) the field of vision prescribed in paragraph 15.2.4.5. when the close proximity mirror has been substituted,

(b) the field of vision prescribed in paragraph 15.2.4.6. when the front mirror has been substituted while the vehicle is moving forward with a speed up to 30 km/h, or

(c) 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. In cases where the vehicle is moving forward at a higher speed than 30 km/h or moving backwards, the monitor may be used for other information, provided that the field of vision prescribed in paragraph 15.2.4.5. is permanently displayed."

Brigade:
15.2.1.1.2
Replace “described” with “Class VI”
Delete “of a front mirror”
Replace “a close proximity mirror” with “the Class V field of vision”
Replace “another” with “a”
Delete “instead of the relevant mirror or mirrors”

Replace “In case” with “In this case”, and delete rest of sentence (“a camera/monitor….exclusively show.”
(HJ: personally I think that this paragraph has to be reworded completely. When we accept that all mirrors can be replaced by a CMS then we don’t have to repeat that in this paragraph. I think that it is only relevant:
- to prescribe that the devices must be approved according paragraph 6.2 and
- to indicate that above 10 km/h the class VI monitor may be used for other information.
Maybe it could be supplemented by a provision for the position of the monitor(s).)

15.2.1.1.2.(a)
Replace “the field of vision” with “the Class V close-proximity field of vision”
Delete “when the close proximity mirror has been substituted”
Add “must be permanently visible to the driver when ignition is on.”

15.2.1.1.2.(b)
Replace “the field of vision” with “the Class VI front view field of vision”
Delete “when the front mirror has been substituted”
Insert “must be permanently visible” (before “while the vehicle….”).

15.2.1.1.2.(c)
Replace “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.” with “the class V and class VI fields of vision prescribed in 15.2.4.5 and 15.2.4.6 may be simultaneously displayed.”

All these are resulting in:

15.2.1.1.2. In case the ~~described~~ **Class VI** field of vision ~~of a front mirror~~ prescribed in paragraph 15.2.4.6. and/or ~~a close proximity mirror~~ **the Class V field of vision** described in paragraph 15.2.4.5. can be obtained by ~~another~~ **a** 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 the relevant mirror or mirrors~~.

In **this** case ~~a camera/monitor device is used, the monitor must exclusively show~~:

(a) the ~~field of vision~~ **Class V close-proximity field of vision** prescribed in paragraph 15.2.4.5. ~~when the close proximity mirror has been substituted~~ **must be permanently visible to the driver when ignition is on**,

(b) the ~~field of vision~~**Class VI front view field of vision** prescribed in paragraph 15.2.4.6. ~~when the front mirror has been substituted~~ **must be permanently visible** while the vehicle is moving forward with a speed up to 10 km/h, or

(c) ~~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~~ **the Class V and Class VI fields of vision prescribed in paragraphs 15.2.4.5. and 15.2.4.6. may be simultaneously displayed**. In the case of the vehicle is moving forward at a higher speed than 10 km/h or moving backwards, the monitor may be used for other information, provided that the field of vision prescribed in paragraph 15.2.4.5. is permanently displayed.

Suggestion for IGCMS: needs further discussion in IGCMS.

Brigade:
15.2.1.1.3
Replace “either with an interior rear-view mirror of Class 1 and an exterior rear-view mirror of Class II or Class III” with “either with a Class I central rear-view device and a Class II or Class III main rear-view device”
HJ: I cannot find the relevant text to be replaced.
Replace “or with two exterior rear-view mirrors of Class II or Class III, “ with “or with two Class II or Class III main rear-view devices for indirect vision,”
HJ: I cannot find the relevant text to be replaced.

Brigade:
15.2.2.1
Replace “Mirrors” with “Devices for indirect vision”
Resulting in:

15.2.2.1. ~~Mirrors~~ **Devices for indirect vision** must be so placed that the driver, when sitting in the driving seat in a normal driving position, has a clear view of the road to the rear, side(s) or front of the vehicle. "

Germany:
Paragraph 15.2.2.1., amend to read:

"15.2.2.1. ~~Mirrors~~ **Devices for indirect vision** ~~must~~ **shall** be so placed that the driver, when sitting in the driving seat in a normal driving position, has a clear view of the road to the rear, side(s) or front of the vehicle. "

Suggestion for IGCMS: as proposed by TüV.

Brigade:
15.2.2.3
Replace “Mirror” with “Device for indirect vision”
Replace “Mirrors” with “Devices for indirect vision”
Resulting in:

15.2.2.3. In the case of any vehicle, which is 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~~ **device for indirect vision** configurations taken into consideration during the tests shall be shown on the type-approval certificate for a vehicle with regard to the installation of ~~mirrors~~ **devices for indirect vision** (see Annex 4).

Germany:
Paragraph 15.2.2.3., amend to read:

"15.2.2.3. In the case of any vehicle, which is 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~~ **devices for indirect vision** configurations taken into consideration during the tests shall be shown on the type-approval certificate for a vehicle with regard to the installation of ~~mirrors~~ **devices for indirect vision** (see Annex 4). "

Suggestion for IGCMS: as proposed by Brigade and TüV.

Brigade:
15.2.2.4
Replace “exterior mirror” with “main rear-view device for indirect vision”
Resulting in:

15.2.2.4. The prescribed ~~exterior mirror~~ **main rear-view device for indirect vision** on the driver's side of the vehicle must be so located that an angle of not more than 55° is formed between the vertical longitudinal median plane of the vehicle and the vertical plane passing through the centre of the mirror and through the centre of the straight line 65 mm long which joins the driver's two ocular points.

Germany:
Paragraph 15.2.2.4., amend to read:

"15.2.2.4. The prescribed exterior ~~mirror~~ **device for indirect vision** on the driver's side of the vehicle ~~must~~ **shall** be so located that an angle of not more than 55° is formed between the vertical longitudinal median plane of the vehicle and the vertical plane passing through the centre of the mirror**/image** and through the centre of the straight line 65 mm long which joins the driver's two ocular points. "
Suggestion for IGCMS: as proposed by Brigade.

Brigade:
15.2.2.5
Replace "Mirrors" with "Devices for indirect vision"
Resulting in:
"15.2.2.5. ~~Mirrors~~ **Devices for indirect vision** must not project beyond the external bodywork of the vehicle substantially more than is necessary to comply with the requirements concerning fields of vision laid down in paragraph 15.2.4. "
.

Germany:
Paragraph 15.2.2.5., amend to read:

"15.2.2.5. ~~Mirrors~~ **Devices for indirect vision** must not project beyond the external bodywork of the vehicle substantially more than is necessary to comply with the requirements concerning fields of vision laid down in paragraph 15.2.4. "
Suggestion for IGCMS: as proposed by TüV and Brigade

Brigade:
15.2.2.7
Replace "In this case an other device for indirect vision is not requested." With "In this case no device for indirect vision is required."
Resulting in:
15.2.2.7. Class V and Class VI mirrors shall be mounted on vehicles in such a way that, regardless of their position after adjustment, no part of these mirrors or their holders is less than 2 m from the ground when the vehicle is under a load corresponding to its technically permissible maximum laden mass.

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~~ **no device for indirect vision is required**.

Suggestion for IGCMS: to be discussed in IGCMS

15.2.2.8
Replace “Mirrors” with “Devices for indirect vision”
Resulting in:

15.2.2.8. Subject to the requirements of paragraphs 15.2.2.5., 15.2.2.6. and 15.2.2.7., ~~mirrors~~ **devices for indirect vision** may project beyond the permissible maximum widths of vehicles.

Suggestion for IGCMS: as proposed by Brigade.

15.2.3.1
Replace “The interior mirror must be capable” with “If a Class I interior mirror is fitted it must be capable”

HJ: why Class I and no “Class I central rear view” mirror (as proposed by Brigade for paragraph 2.1.1.13)?

15.2.3.2
Replace “The exterior mirror situated on the driver’s side must be capable” with “If an exterior Class II or Class III mirror is fitted on the driver’s side, it must be capable”
Resulting in:

15.2.3.1. ~~The interior mirror~~ **If a Class I interior mirror is fitted it** must be capable of being adjusted by the driver from his driving position.

15.2.3.2. ~~The exterior mirror situated on the driver's side~~ **If an exterior Class II or Class III mirror is fitted on the driver’s side, it** must be capable of being adjusted from inside the vehicle while the door is closed, although the window may be open. The mirror may, however, be locked in position from the outside.

Suggestion for IGCMS: as proposed by Brigade.

15.2.4.1
Replace “Interior rear-view mirror” with “Central rear-view field of vision”
Replace “Figure 3: Field of vision of Class I mirror” with “Figure 3: Class I field of vision”
Resulting in:

15.2.4.1. ~~Interior rear-view mirror~~ **Central rear-view field of vision** (Class I)

The field of vision must be such that the driver can see at least a 20 m wide, flat, horizontal portion of the road centred on the vertical longitudinal median plane of the vehicle and extending from 60 m behind the driver's ocular points (Figure 4) to the horizon.

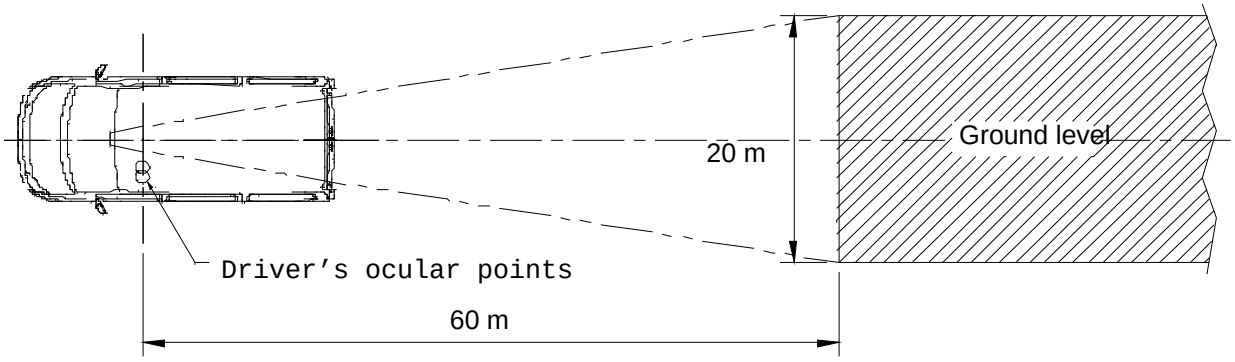


Figure 4: **Class I field** ~~Field~~ of vision ~~of Class I mirror~~

Germany:

Paragraph 15.2.4.1., amend to read:

"15.2.4.1. ~~Interior rear-view mirror~~ **Device for indirect vision of** ~~(~~Class I~~)~~.

The field of vision …… "

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4.

Paragraph 15.2.4.2., amend to read:

"15.2.4.2. ~~Main exterior rear-view mirrors~~ **Devices for indirect vision of** ~~(~~Class II~~)~~. "

Brigade:

15.2.4.2

15.2.4.2. Replace "Main exterior rear-view mirrors (Class II)" with "Class II main rear-view field of vision"

Resulting in:

15.2.4.2. ~~Main exterior rear-view mirrors~~ Class II **main rear-view field of vision**

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

15.2.4.2.1

Replace "Exterior rear-view mirror" with "Main rear-view field of vision"

Resulting in:

15.2.4.2.1. ~~Exterior~~ **Main** rear-view **field of vision** ~~mirror~~ on the driver's side

The field of vision must 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 must 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 (see Figure 5).

Germany:
Paragraph 15.2.4.2.1., amend to read:

"15.2.4.2.1. ~~Exterior rear-view mirror~~ **Device for indirect vision** on the driver's side.

The field of vision …… "

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Paragraph 15.2.4.2.2., amend to read:

"15.2.4.2.2. ~~Exterior rear-view mirror~~ **Device for indirect vision** on the passenger's side.

The field of vision …… "

Brigade:
15.2.4.2.2
Replace “Exterior” with “Main”
Replace “mirror” with “field of view”
Replace “Figure 4: Field of vision of Class II mirrors” with “Figure 4: Class II field of vision”
Resulting in:
15.2.4.2.2. ~~Exterior~~ **Main** rear-view **field of view [HJ: vision?]**~~mirror~~ on the passenger's side

The field of vision must 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 must 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 (see Figure 5).

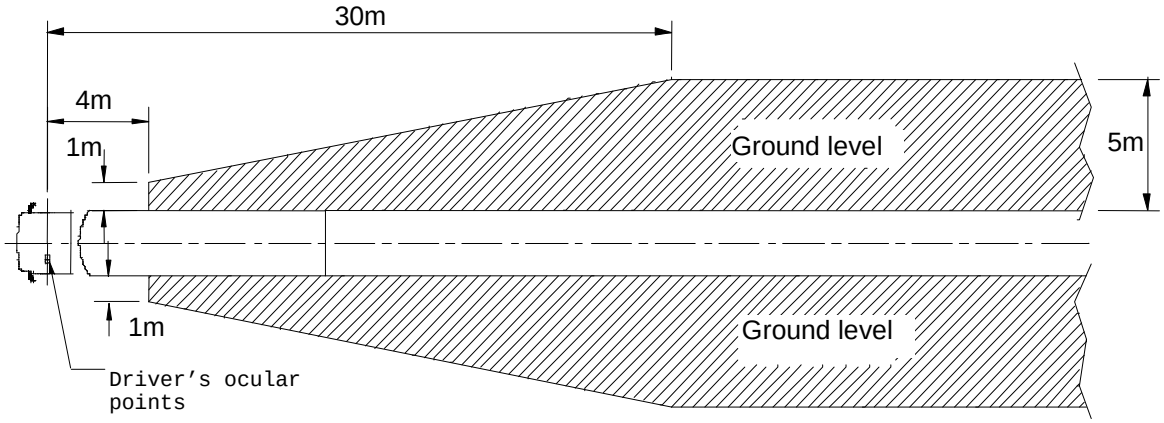


Figure 5: ~~Field of vision of Class II mirrors~~ Class II field of vision

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

15.2.4.3

Replace"Main exterior rear-view mirrors (Class III) with "Class III main rear-view field of vision"

Resulting in:

15.2.4.3. ~~Main exterior~~ **Class III main** rear-view **field of vision** ~~mirrors Class III~~

Germany:

Paragraph 15.2.4.3., amend to read:

"15.2.4.3. ~~Main exterior rear-view mirrors~~ **Devices for indirect vision of** Class III "

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:

15.2.4.3.1

Replace "Exterior" with "Main"

Replace "mirror" with "field of view"

Resulting in:

15.2.4.3.1. ~~Exterior~~ **Main** rear-view ~~mirror~~ **field of view [HJ: vision?]**on the driver's side

The field of vision must 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 5).

In addition, the road must 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.

Germany:

Paragraph 15.2.4.3.1., amend to read:

"15.2.4.3.1. ~~Exterior rear-view mirror~~ **Device for indirect vision** on the driver's side.

The field of vision …… "

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:

15.2.4.3.2

Replace “Exterior” with “Main”

Replace “mirror” with “field of view”

Replace “Figure 5: Field of vision of Class III mirrors” with “Figure 5: Class III field of vision”

Resulting in:

15.2.4.3.2. ~~Exterior~~ **Main** rear-view **field of view** ~~mirror~~ on the passenger’s side

The field of vision must 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 must 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.

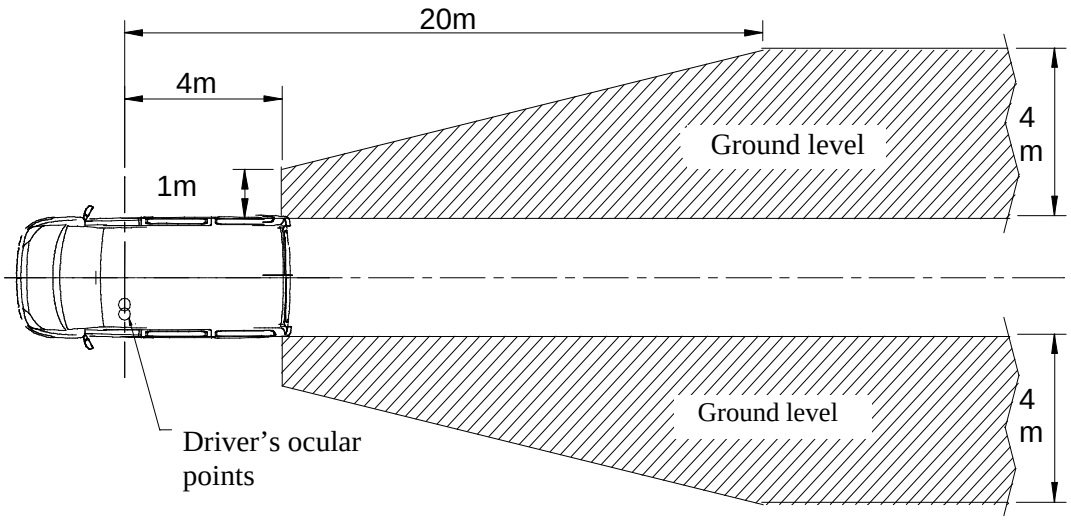


Figure 6: ~~Field of vision of~~ Class III **field of vision** ~~mirrors~~

Germany:

Paragraph 15.2.4.3.2., amend to read:

"15.2.4.3.2. ~~Exterior rear-view mirror~~ **Device for indirect vision** on the passenger's side.

The field of vision …… "
Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:
15.2.4.4
Replace “”Wide-angle” exterior mirror” with “Class IV wide-angle field of vision”
Resulting in:
15.2.4.4. ~~Wide-angle" exterior mirror (Class IV)~~ Class IV wide-angle field of vision

Germany:
Paragraph 15.2.4.4., amend to read:

"15.2.4.4. ~~"Wide-angle" exterior mirror~~ **Device for indirect vision of** Class IV. "
Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:
15.2.4.4.1
Replace “exterior mirror” with “field of view”
Resulting in:
15.2.4.4.1. Wide-angle **field of view** [HJ: vision?]~~exterior mirror~~ on the driver’s side
The field of vision must 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 must 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 (see Figure 6).

Germany:
Paragraph 15.2.4.4.1., amend to read:

"15.2.4.4.1. ~~"Wide-angle" exterior mirror~~ **Device for indirect vision** on the driver's side.

The field of vision …… "
Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Paragraph 15.2.4.4.2., amend to read:

"15.2.4.4.2. "~~Wide-angle" exterior mirror~~ **Device for indirect vision** on the passenger's side.

The field of vision …… "

Brigade:
15.2.4.4.2
Replace “exterior mirror” with “field of view”
Replace “Figure 6: Field of vision of Class IV wide-angle mirrors” with “Figure 6: Class IV wide-angle field of vision”
Resulting in:

15.2.4.4.2. "Wide-angle" **field of view [vision?]**~~exterior mirror~~ on the passenger’s side

The field of vision must 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 must 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 (see Figure 6).

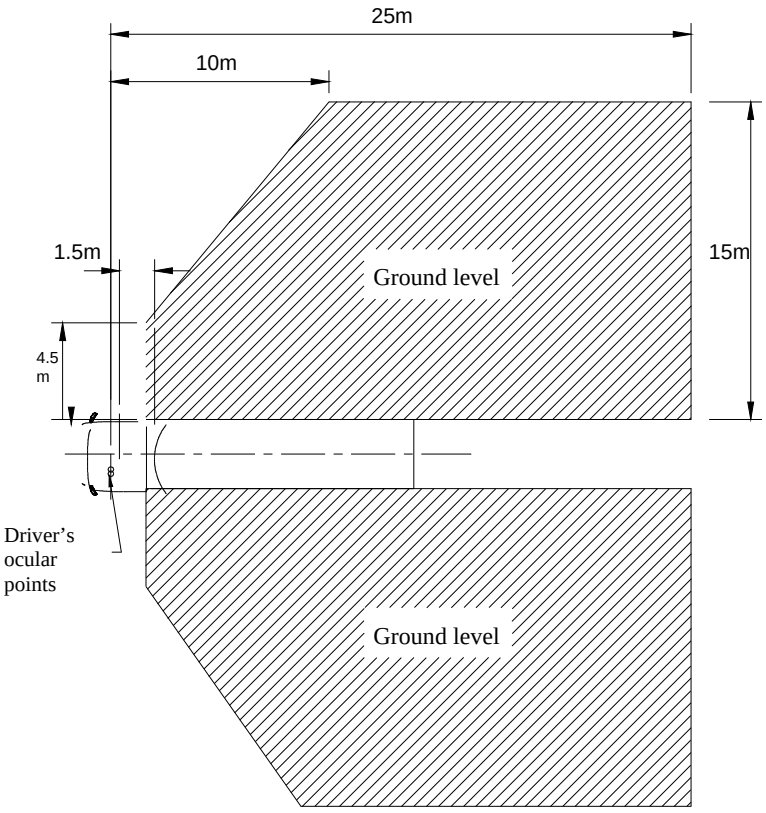


Figure 7: ~~Field of vision of Class IV wide-angle mirrors~~ **Class IV wide-angle field of vision**

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

15.2.4.5

Replace “”close-proximity” exterior mirrors (Class V)” with “Class V close-proximity fields of vision”
Resulting in:

15.2.4.5. ~~Close-proximity" exterior mirror (Class V)~~ **Class V close-proximity fields of vision**

The field of vision must be such that the driver can see a flat horizontal portion of the road along the side of the vehicle, bounded by the following vertical planes (see Figures 7a and 7b):

Germany:

Paragraph 15.2.4.5., amend to read:

"15.2.4.5. ~~"Close-proximity" exterior mirror~~ **Device for indirect vision of** Class V.

The field of vision …… "

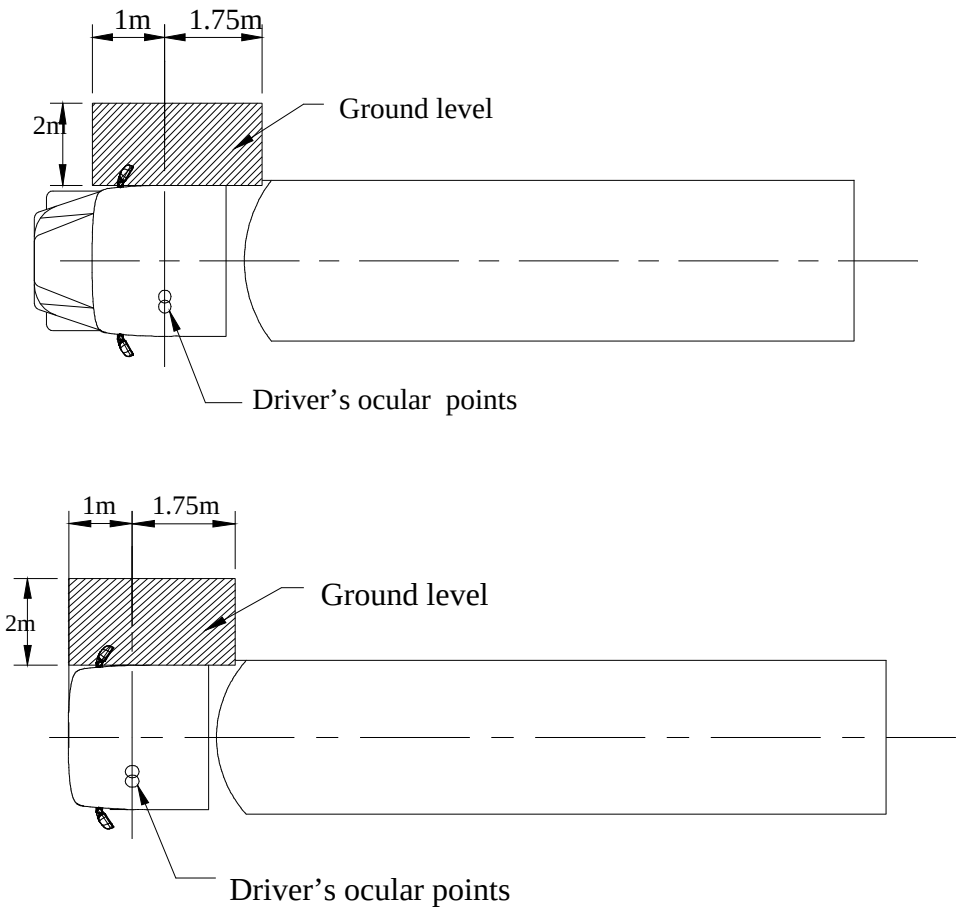
Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:

15.2.4.5.5

Replace “wide-angle mirror” with “device for indirect vision”
Replace “front mirror” with “device for indirect vision”
Replace “mirror” with “device for indirect vision”
Replace “Figures 7a and &7b: Field of vision of Class V close-proximity mirror” with “Figures 7a and 7b: Class V close-proximity field of vision”
Resulting in:

15.2.4.5.5. 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 **device for indirect vision**~~wide-angle mirror~~ and that of a Class VI **device for indirect vision** front ~~mirror~~, the installation of a Class V close proximity **device for indirect vision** ~~mirror~~ is not compulsory.



Figures 7a and 8b: ~~Field of vision of~~ Class V close-proximity ~~mirror~~ **field of vision**

Germany:
Paragraph 15.2.4.5.5., amend to read:

"15.2.4.5.5. 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~~ **device for indirect vision** and that of a Class VI ~~front mirror~~ **device for indirect vision**, the installation of a Class V ~~close-proximity~~ ~~mirror~~ **device for indirect vision** is not compulsory. "

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Paragraph 15.2.4.6., amend to read:
"15.2.4.6. ~~"Front" mirror~~ **Device for indirect vision of** Class VI. "
Suggestion for IGCMS: as proposed by Germany

Brigade:
15.2.4.6.1 (3rd paragraph)
Replace "The provisions for front mirrors" with "The provisions for Class VI front view devices"

(last paragraph)
Replace “a front mirror or a camera/monitor device” with “a device for indirect vision”
Replace “Figure 8: Field of vision of Class VI front mirror” with “Figure 8: Class VI front view field of vision”
Resulting in:

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

(a) a transverse vertical plane through the outermost point of the front of the vehicle,

(b) a transverse vertical plane 2,000 mm in front of the plane defined in (a),

(c) a longitudinal vertical plane parallel to the longitudinal vertical median plane going through the outermost side of the vehicle at the driver's side and,

(d) a 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 9)".

For the defined field of vision, see also paragraph 15.2.4.9.2.

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

If vehicles of these categories cannot fulfil the requirements by using a ~~front mirror or a camera/monitor device~~ **a device for indirect vision**, a vision support system shall be used. In the case of a vision support system this device must be able to detect an object of 50 height and with a diameter of 30 cm within the field defined in figure 9.

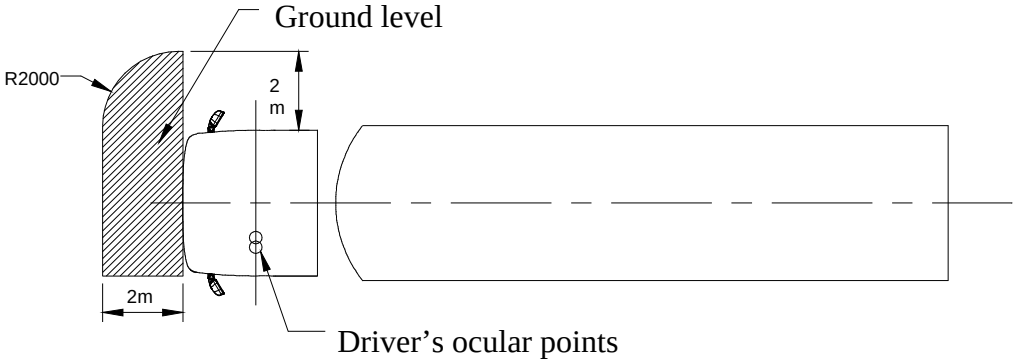


Figure 9: ~~Field of vision of Class VI front mirror~~ **Class VI front view field of vision**

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Germany:
Paragraph 15.2.4.6.1., amend to read:

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

(a) a transverse vertical plane through the outermost point of the front of the vehicle,

(b) a transverse vertical plane 2,000 mm in front of the plane defined in (a),

(c) 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,

(d) a 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~~ **devices Class VI** are compulsory for forward controlled (as defined in paragraph 12.5.) vehicles of categories N2 > 7.5 t and N3.

If vehicles of these categories cannot fulfil the requirements by using a front mirror or a ~~camera/monitor~~ device **for indirect vision**, a vision support system 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. "

Suggestion for IGCMS: as proposed by Brigade and the addition of “cm” in the last subparagraph

Paragraph 15.2.4.6.2., amend to read:

"15.2.4.6.2. However, if the driver can see, taking into account the obstructions by the A pillars, a straight line 300 mm in front of the vehicle at a height of 1,200 mm above the road surface and which is situated between a longitudinal vertical plane parallel to the longitudinal vertical median plane going through the outermost side of the vehicle at the driver's side and a longitudinal vertical plane parallel to the longitudinal vertical median plane 900 mm outside the outermost side of the vehicle opposite to the driver's side, a ~~front mirror~~ **device for indirect vision** of Class VI is not mandatory. "

Suggestion for IGCMS: as proposed by Germany

RDW:

Paragraph 15.2.4.7 to 15.2.4.7.2, amend to read:

15.2.4.7. ~~L-category mirror (Class VII).~~ **Class VII main rear-view field of vision**

15.2.4.7.1. ~~Exterior~~ **Main** rear-view **field of vision** ~~mirror~~ on the driver's side

The field of vision must be such that the driver can see at least a 2.50 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 10 m behind the driver's ocular points to the horizon (see Figure 10).

15.2.4.7.2. ~~Exterior~~ **Main** rear-view **field of vision** ~~mirror~~ on the passenger's side

The field of vision must 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 10).

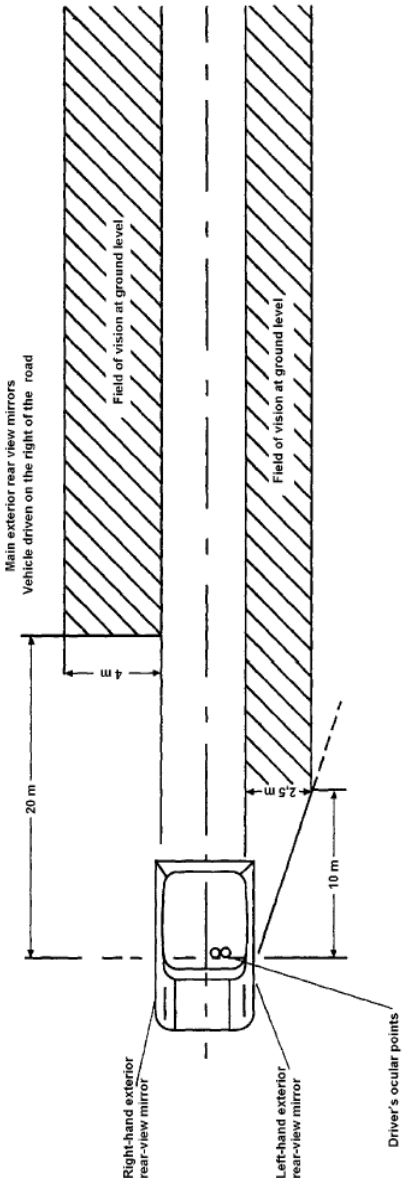


Figure 10: ~~Field of vision of~~ Class VII **field of vision** ~~mirrors~~.

Suggestion for IGCMS: as proposed by RDW

Germany:
Paragraph 15.2.4.8.1., amend to read:

"15.2.4.8.1. ~~Interior rear-view mirror~~ **Device for indirect vision** (Class I). "
[HJ: the paragraphs have been renumbered]

Brigade:
15.2.4.8.1 [HJ: the paragraphs have been renumbered]
Replace "Interior rear-view mirror (Class I)" with "interior-mounted Class I rear-view devices"
Resulting in:
15.2.4.9.1. Interior-**mounted Class I** rear-view **devices** ~~mirror (Class I)~~
The field of vision may be reduced by the presence of devices such as sun visors, windscreen wipers, heating elements and stop lamp of category S3, provided that all these devices together do not obscure more than 15 per cent of the prescribed field of vision. Headrests or framework or bodywork such as window columns of rear split doors, rear window frame shall be excluded from the calculation. This requirement shall be tested by projection on to a vertical plane at right angles to the longitudinal centreplane of the vehicle. The degree of obstruction shall be measured with the sun visors folded back.
Suggestion for IGCMS: as proposed by Brigade.

Brigade:
15.2.4.8.2 [HJ: the paragraphs have been renumbered]
Replace "Exterior mirrors (Classes II, III, IV, V, and VI) with "Exterior mounted devices (Classes II, III, IV, V, and VI)

Replace "field of vision of a Class VI mirror" with "field of vision of a Class VI device for indirect vision"
Resulting in:
15.2.4.9.2. Exterior ~~mirrors~~ **mounted devices** (Classes II, III, IV, V and VI).

In the fields of vision specified above, obstruction due to the bodywork and its components, such as other cab 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. In the case of a vehicle designed and constructed for special purposes where, due to its special features, it is not possible to meet this requirement, the obstruction of the required field of vision of a Class VI ~~mirror~~ **device for indirect vision** caused by the special features may be more than 10 per cent but not more than necessary for its special function.

Germany:
Paragraph 15.2.4.8.2., amend to read:

"15.2.4.8.2. Exterior ~~mirrors~~ **devices for indirect vision** (Classes II, III, IV, V and VI).

In the fields of vision specified above, obstruction due to the bodywork and its components, such as other cab 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. In the case of a vehicle designed and constructed for special purposes where, due to its special features, it is not possible to meet this requirement, the obstruction of the required field of vision of a Class VI ~~mirror~~ **device for indirect vision** caused by the special features may be more than 10 per cent but not more than necessary for its special function. "

[HJ: the paragraphs have been renumbered]

Suggestion for IGCMS: as proposed by Brigade because it is in line with 2.1.4..

Brigade:

15.3.4

Replace “The viewing direction of the monitor shall roughly be the same direction as the one for the main mirror.” with “Monitors should be located on the same side of the steering wheel as the field of view being displayed.

Resulting in:

15.3.4. Installation requirements for the monitor

~~The viewing direction of the monitor shall roughly be the same direction as the one for the main mirror.~~ **Monitors should [HJ: shall?]be located on the same side of the steering wheel as the field of view being displayed.**

Germany:

Paragraph 15.3.4., amend to read:

"15.3.4. Installation requirements for the monitor.

The viewing direction of the monitor shall roughly be the same direction as the one for the ~~main~~ **adequate** mirror. "

Suggestion for IGCMS: to be discussed in IGCMS

Paragraph 15.3.5., amend to read:

"15.3.5. Vehicles **of category M and N** 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** ~~with additional devices for indirect vision~~. "

HJ: this paragraph has been changed in the mean time.

Brigade:

21.2 and 21.3

Replace “mirror” with “device for indirect vision”

Resulting in:

21.2. As from 26 January 2006, Contracting Parties applying this Regulation shall grant approvals to a type of vehicle with regard to the installation of devices for indirect vision only if the type of vehicle meets the requirements of this Regulation as amended by the 02 series of amendments. However, this date shall be postponed by 12 months as regards the requirements concerning the installation of a Class VI front **device for indirect vision** ~~mirror~~.

21.3. As from 26 January 2006, Contracting Parties applying this Regulation shall grant approvals to a type of devices for indirect vision only if the type meets the requirements of this Regulation as amended by the 02 series of amendments. However, this date shall be postponed by 12 months with regard to the requirements concerning a Class VI front **device for indirect vision** ~~mirror~~ as a component and its installation on vehicles.

Suggestion for IGCMS: as proposed by Brigade

B. JUSTIFICATION

Germany would like to permit the use of a camera monitor systems instead of all compulsory and optional mirrors, set out in the table under paragraph 15.2.1.1.1., intended to be installed on motor vehicles to use the safety and environmental benefits of this technology as there are:

(a) No obstructions
(b) No adjustment
(c) Reduced CO_2-emission
(d) Wider field of view
(e) Free of pollution
(f) Night vision
(g) Integrated advanced driver assistant systems (lane departure warning)

[As it is mentioned in informal document GRSG-94-24, Germany is of the opinion, that the current procedure and requirements for the assessment of camera-monitor devices belong to standardization processes at the international level. Germany's proposal is to address these standardization items to the responsible standardization committees like ISO TC 22/SC 13/ WG8, that is also in charge of ISO 15008 and ISO TC159/SC4/WG2 (human factors engineering-visual display requirements). ISO 15008 is addressing the requirements for visual information presentation in vehicles. It should be extended to the requirements and measurement methods for camera-monitor devices and their applications. Future regulations for camera-monitor devices should refer to these standards as usually practiced.]

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