



Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on General Safety Provisions****121st session**

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Item 4 (c) of the provisional agenda

Awareness of the proximity of Vulnerable Road Users:**UN Regulation No. 158 (Reversing motion)****Proposal for amendments to UN Regulation No. [158]
(devices for reversing motion and motor vehicles with regard
to the driver's awareness of vulnerable road users behind
vehicles)****Submitted by the experts from VRU-Proxi Informal Working Group
(VRU-Proxi)***

The text was reproduced below was prepared by the experts from the VRU-Proxi Informal Working Group (VRU-Proxi) to amend the new UN Regulation on uniform provisions concerning the approval of devices for reversing motion and motor vehicles with regard to the driver's awareness of vulnerable road users behind vehicles. The modifications to the existing text are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (Sect.20), para 20.51), 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..

I. Proposal

Title, amend to read:

"UN Regulation on uniform provisions concerning the approval of **devices and motor vehicles** ~~devices for reversing motion and motor vehicles~~ with regard to the driver's awareness of vulnerable road users behind vehicles **when reversing**"

Contents, amend to read:

"Regulation

- 1. Scope
- I. Devices for **means of rear visibility** ~~Reversing Motion~~
- 2. Definitions
- 3. Application for approval
- 4. Markings
- 5. Approval
- 6. Requirements
- 7. Modification of the type of device for **means of rear visibility** ~~indirect vision~~ and extension of approval
- 8. Conformity of production
- 9. Penalties for non conformity of production
- 10. Production definitively discontinued
- 11. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities
- II. Installation of **means of rear visibility or detection** ~~devices for reversing motion~~.....
- 12. Definitions
- 13. Application for approval
- 14. Approval
- 15. Requirements
- 16. Requirements for rear-view camera system
- 17. Requirements for detection systems.....
- 18. Modifications of the vehicle type and extension of approvals
- 19. Conformity of production
- 20. Penalties for non-conformity of protection
- 21. Production definitively discontinued
- 22. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities

Annexes

- 1 Information document for type approval of a device for **means of rear visibility** ~~reversing motion~~
- 2 Information document for type approval of vehicle with respect to the installation of **means of rear visibility or detection** ~~devices for reversing motion~~.....
- 3 Communication concerning the approval or refusal or extension or withdrawal of approval or production definitively discontinued of a type of device (**Separate**

	Technical Unit) for means of rear visibility reversing motion , pursuant to Regulation No. [158]
4	Communication concerning the approval or refusal or extension or withdrawal of approval or production definitively discontinued of a type of vehicle with regard to means of rear visibility or detection the mounting of devices for reversing motion , pursuant to Regulation No. [158].....
	Appendix.....
5	Arrangement of approval mark for a device for means of rear visibility indirect vision
6	Test method for determining reflectivity
7	Procedure for determining the radius of curvature "r" of the reflecting surface of a mirror
8	Procedure for determining the "H" point and the actual torso angle for seating positions in motor vehicles
	Appendix 1 - Description of the three-dimensional "H" point machine (3-D H machine).....
	Appendix 2 - Three-dimensional reference system.....
	Appendix 3 - Reference data concerning seating positions
9	Test methods for close-proximity rear-view field of vision.....
10	Test methods for detection systems

Introduction, amend to read:

"The purpose of this Regulation is to provide the provisions for ~~reversing motion~~ **means of rear visibility and detection that would improve the driver's awareness of vulnerable road users behind vehicles when reversing concerning on awareness of vulnerable road users proximity**. UN Regulation No. 46. provides the provisions for indirect vision of motor vehicles. This Regulation expands driver's ~~vision or awareness for behind vehicles rear direction~~ when ~~in~~ reversing ~~motion~~. Therefore, some requirements of this Regulation may be satisfied by devices complying with UN Regulation No.46.

This Regulation cannot cover all the traffic conditions and infrastructure features in the type approval process; this Regulation recognises that the performances required in this Regulation cannot be achieved in all conditions (vehicle speed and condition, weather conditions, and traffic scenarios etc. may affect the system performances)."

Paragraphs 1.1. and 1.2, amend to read:

- "1.1. Approval of devices for **means of rear visibility reversing safety** defined in Part I intended to be fitted to vehicles of category M and N.
- 1.2. Approval of vehicle installation of ~~devices for~~ **means of rear visibility or detection reversing safety** defined in Part II if fitted to vehicles of category M and N."

Paragraph 1.4., amend to read:

- "1.4. The following vehicles of category M and N shall be exempted from this Regulation:

Vehicles where installation of ~~any device for~~ **means of rear visibility or detection reversing safety** is incompatible with their on-road use may be partly or fully exempted from this Regulation, subject to the decision of the Type Approval Authority."

Part I title, amend to read:

"Part I Devices for ~~Reversing Motion~~ **means of rear visibility**"

Paragraph 2.1., amend to read:

"2.1. *"Devices for **means of rear visibility or detection reversing motion**"* means devices intended, **when reversing**, to give a clear view of the rear of the vehicle within the fields of vision defined in paragraph 15.2. **or intended to detect objects in the field of detection defined in paragraph 15.3.**

These can be conventional mirrors, Rear-View Camera System, **detection systems** or other devices ~~able to present information about the field of vision to the driver.~~"

Paragraph 2.1.2., amend to read:

"2.1.2. *"Devices for **means of rear visibility indirect vision**"* means devices that present information of the fields of vision defined in paragraph 15.2."

Paragraph 2.1.2.3., amend to read:

"2.1.2.3. *"Other devices for **means of rear visibility indirect vision**"* means devices as defined in paragraph 2.1.2. above, where the field of vision is not obtained by means of a mirror or a Rear-View Camera System."

Paragraph 2.2., amend to read:

"2.2. *"Type of device for **means of rear visibility or detection Reversing Safety**"* 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 shape, the dimensions and radius of curvature of the mirror's reflecting surface;
- (c) In the case of Rear-View Camera System, the field of view, the magnification.
- (d) In the case of detection systems, the sensor type, the information signal type."

Paragraphs 3.1. to 3.4., amend to read:

"3.1. The application for approval of a type of device for **means of rear visibility indirect vision** shall be submitted by the holder of the trade name or mark or by his duly accredited representative.

3.2. A model of information document is shown in Annex 1.

3.3. For each type of device **for means of rear visibility indirect vision** the application shall be accompanied by three samples of the parts.

~~3.4. The RVCS shall be provided by the applicant with the following documents:~~

- ~~(a) Technical specification of the RVCS; and~~
- ~~(b) Operator's manual."~~

Paragraphs 4.1. and 4.2., amend to read:

"4.1. The samples of devices for **means of rear visibility indirect vision** submitted for approval shall bear the trade name or mark of the manufacturer; this marking shall be clearly legible and be indelible.

4.2. Every device for **means of rear visibility indirect vision** shall possess, on at least one of the main components, a space large enough to accommodate the approval mark, which shall be legible; this space shall be shown on the drawings referred to in Annex 1. The approval mark shall also be legible when the device is mounted on the vehicle ~~with the exception of Rear View Camera System as defined in paragraph 2.1.2. or a detection system as defined in paragraph 2.1.5.~~ Other components of the device shall bear a means of

identification. In the case of limited space for the approval mark(s), other means of identification that link it to the approval mark shall be provided."

Paragraphs 5.1. to 5.4.1., amend to read:

- "5.1. If the samples submitted for approval meet the requirements of paragraph 6. of this Regulation, approval of the pertinent type of device for **means of rear visibility** ~~indirect vision~~ shall be granted.
- 5.2. An approval number shall be assigned to each type approved. Its first two digits (at present 00) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another type of device for **means of rear visibility** ~~indirect vision~~.
- 5.3. Notice of approval or of refusal or of extension or withdrawal of approval or of production definitively discontinued of a type of device for **means of rear visibility** ~~indirect vision~~ pursuant to this Regulation shall be communicated to the Parties to the Agreement which apply this Regulation by means of a form conforming to the model in Annex 3 to this Regulation.
- 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 **means of rear visibility** ~~indirect vision~~, conforming to a type approved under this Regulation, in addition to the mark prescribed in paragraph 4.1. above, an international approval mark consisting of:
- 5.4.1. A circle surrounding the letter "E" followed by:
- (a) The distinguishing number of the country which has granted approval; and
 - (b) The number of this Regulation, followed by the letter "R", a dash and the approval number."

Paragraphs 6.2, 6.2.1. and 6.2.1.1. should be deleted:

- ~~"6.2. Close proximity rear view devices for indirect vision other than mirrors~~
- ~~6.2.1. General requirements~~
- ~~6.2.1.1. The effectiveness of the RVCS and other vision supporting devices of Close proximity rear view shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by compliance with the technical requirements and transitional provisions of UN Regulation No. 10, 05 series of amendments or any later series of amendments."~~

Paragraphs 7.1. to 7.1.1., amend to read:

- "7. Modification of the type of device for **means of rear visibility** ~~reversing motion~~ and extension of approval
- 7.1. Every modification to an existing type of device for **means of rear visibility** ~~indirect vision~~ including its connection to the bodywork shall be notified to the Type Approval Authority which approved the type of device for **means of rear visibility** ~~indirect vision~~. The Type Approval Authority shall then either:
- (a) Decide, in consultation with the manufacturer, that a new type-approval is to be granted; or
 - (b) Apply the procedure contained in paragraph 7.1.1. (Revision) and, if applicable, the procedure contained in paragraph 7.1.2. (Extension).
- 7.1.1. Revision
- When particulars recorded in the information folder have changed and the Type Approval Authority considers that the modifications made are unlikely to have an appreciable adverse effect and that in any case the device for **means**

of rear visibility indirect-vision still complies with the requirements, the modification shall be designated a "revision".

In such a case, the Type Approval Authority shall issue the revised pages of the information folder as necessary, marking each revised page to show clearly the nature of the modification and the date of re-issue. A consolidated, updated version of the information folder, accompanied by a detailed description of the modification, shall be deemed to meet this requirement."

Paragraph 8.2., amend to read:

"8.2. Every device for **means of rear visibility indirect-vision** approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set out in paragraph 6. above."

Paragraph 9.1., amend to read:

"9.1. The approval granted in respect of a type of device for **means of rear visibility indirect-vision** pursuant to this Regulation may be withdrawn if the requirement laid down in paragraph 8.1. above is not complied with or if the type of device for **means of rear visibility indirect-vision** did not satisfy the requirements prescribed in paragraph 8.2. above."

Paragraph 10., amend to read:

"10. Production definitively discontinued

If the holder of the approval completely ceases to manufacture a type of device for **means of rear visibility indirect-vision** approved in accordance with this Regulation, he shall so inform the Type Approval Authority which granted the approval. Upon receiving the relevant communication, the Authority shall inform thereof the other Parties to the Agreement applying this Regulation by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation "PRODUCTION DISCONTINUED"."

Part II title, amend to read:

"Part II Installation of **means of rear visibility or detection** ~~devices for reversing motion~~"

Paragraph 12.3.1., amend to read:

"12.3.1. Type of **means of rear visibility or detection** ~~device for reversing motion~~;"

Add paragraph 12.9. to read:

"12.9. **"Type of means of rear visibility or detection "** means rear visibility or detection means that do not differ on the following essential characteristics:

- (a) **The type of devices of means of rear visibility or detection;**
- (b) **The mean of rear visibility or detection;"**

Paragraph 13.1., amend to read:

"13.1. The application for approval of a vehicle type with regard to the installation of **means of rear visibility or detection** ~~devices for indirect-vision~~ shall be submitted by the vehicle manufacturer or by his duly accredited representative."

Paragraph 15.1., amend to read:

"15.1. General

For the purpose of this Regulation, the vehicle shall fulfil the following requirements:

During a backing event at least one means of **rear visibility or detection** ~~vision or awareness~~ shall be provided to the driver.

Means of **rear visibility** ~~vision~~ provide a close-proximity rear-view field of vision as defined in paragraph 15.2 below. Possible means are:

- (a) Direct vision,
- (b) Devices approved to UN Regulation No. 46,
- (c) Close Proximity Rear-view Mirror complying with this Regulation,
- (d) Rear-View Camera System complying with this Regulation.

Means of **detection** ~~Awareness~~ provide an information other than vision for field of detection as defined in paragraphs 15.3 below. Possible means are:

- (a) Detection System complying with this Regulation."

Paragraph 15.2.1.4., amend to read:

"15.2.1.4. Via a ~~device of indirect vision~~ **means of rear visibility** (mirror or RVCS or other) complying with this Regulation; or"

Paragraph 15.2.3., amend to read:

"15.2.3. In **the** case of a combination of ~~devices~~ **means of rear visibility or detection**, each **entire** transverse row of test objects shall be seen by one ~~device of these means~~. The close-proximity rear-view field of vision shall be obtained from the minimum number of mirrors and monitors."

Paragraphs 15.4.1.1. to 15.4.1.4., amend to read:

"15.4.1.1. Devices for **means of rear visibility or detection** ~~indirect vision~~ shall be so placed that the driver, when sitting on 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.

15.4.1.2. In the case of any vehicle, which is in chassis/cab form when the field of vision **or detection** is measured, the minimum and maximum body widths, **heights and lengths** shall be stated by the manufacturer and, if necessary, simulated by dummy headboards. All vehicles and devices for **means of rear visibility or detection** ~~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 devices for **means of rear visibility or detection** ~~indirect vision~~ (see Annex 4). **This includes information related to a range of device installation positions (in length, width and height).**

15.4.1.3. Devices for **means of rear visibility or detection** ~~indirect vision~~ shall not project beyond the external bodywork of the vehicle substantially more than is necessary to comply with the requirements concerning fields of vision **or fields of detection**.

15.4.1.4. Devices for **means of rear visibility or detection** ~~indirect vision~~ shall be fitted in such a way that the devices do not move so as significantly to change the field of vision **or detection** as measured or vibrate to an extent which would cause the driver to misinterpret the nature of the image perceived."

Paragraph 16.1.1.3., amend to read:

"16.1.1.3. Deactivation

The rear-view image shall remain visible during the backing event until either, the driver modifies the view, or the vehicle direction selector is no longer in the reverse position **or the backing event is finished**.

Modifying the view means to switch to any other camera views.

The view can be manually switched off when the vehicle is not moving rearward.

The system may be switched off when the vehicle detects a coupling by means of a coupling device."

Paragraph 16.1.2.1., amend to read:

"16.1.2.1. Response time

The rear-view image meeting the requirements described in 15.2. shall be provided ~~after~~ **within** a maximum of 2.0 seconds after start of the backing event, when tested according to paragraphs 2. of Annex 9."

Add *paragraph 16.4.* to read:

"16.4 The effectiveness of the RVCS shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by compliance with the technical requirements and transitional provisions of UN Regulation No. 10, 05 series of amendments or any later series of amendments."

Paragraph 17.1., amend to read:

"17.1. System activation

The system shall be activated when the backing event starts. If proper functioning cannot be effected, either the system shall automatically shut off or the driver shall be able to deactivate the system manually.

The detection system shall remain active as long as **either** the vehicle direction selector is in the reverse position **or the backing event is not ended**.

In case the vehicle can detect coupling with a coupling device, the system may be switched off."

Paragraph 17.2.2., amend to read:

"17.2.2. Audible information

When an object is detected in the rear horizontal area as described in paragraph 1.3. of Annex 10. while the reverse gear is selected/engaged, audible information in accordance with ISO 15006:2011 shall be given.

In presenting audible information, the distance **to the target** may be identified **by at two or more acoustic levels signals**. These **acoustic signals zones**, differentiating ~~by levels (distances)~~ and detection widths, may be indicated by changing the frequency of **the** intermittent sound, ~~and a~~ **A** faster intermittent sound or continuous sound shall be used as the distance becomes closer."

Paragraph 17.2.3., amend to read:

"17.2.3. Duration of signalling

Signalling for an object shall last as long as the object is detected and shall end when the object is no longer detected or when the system is deactivated.

To reduce the driver's discomfort, the audible signal can be automatically suspended temporarily after a certain time set by the manufacturer has elapsed, provided that the system remains activated. If, while the audible signal is automatically suspended temporarily, the distance to the object becomes shorter, the audible signal shall be automatically resumed. If the distance to the object becomes longer, the audible signal may remain suspended."

Paragraph 17.4. to be added:

"17.4 The effectiveness of the detection system shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by compliance with the technical requirements and transitional provisions of UN Regulation No. 10, 05 series of amendments or any later series of amendments."

Annex 1, amend to read:

"Annex I

Information document for type approval of a device for **means of rear visibility reversing motion**

The following information, if applicable, shall be supplied in triplicate and shall include a list of contents.

Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 paper or on a folder of A4 format.

Photographs, if any, shall show sufficient details.

1. Make (trade name of manufacturer):
2. Type and general commercial description(s):
3. Means of identification of the type, if indicated on the device:
4. Category of vehicle for which the device is intended:
5. Name and address of manufacturer:
6. Location and method of affixing of the approval mark **for close-proximity rear-view mirrors**:
- 6.1. Other mean of identification link to the approval mark **for close-proximity rear-view mirrors**:
7. Address(es) of assembly plant(s):
8. Mirrors (state for each mirror):
- 8.1. Variant
- 8.2. Drawing(s) for the identification of the mirror:
- 8.3. Details of the method of attachment:
9. ~~Devices for indirect vision other than mirrors:~~
- 9.1. ~~Type and characteristics (such as a complete description of the device):~~
- 9.2. ~~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, amend to read:

"Annex II

Information document for type approval of vehicle with respect to the installation of **means of rear visibility or detection devices** ~~for reversing motion~~

The following information, if applicable, shall be supplied in triplicate and include a list of contents.

Any drawings shall be supplied in appropriate scale and in sufficient detail on size A4 paper or on a folder of A4 format.

Photographs, if any, shall show sufficient details.

General

1. Make (trade name of manufacturer):.....
2. Type and general commercial description(s):
3. Means of identification of type, if marked on the vehicle:
4. Location of that marking:.....

5. Category of vehicle:
 6. Name and address of manufacturer:
 7. Address(es) of assembly plant(s):
- General construction characteristics of the vehicle
8. Photograph(s) and/or drawing(s) of a representative vehicle:
 9. Driving position: left/right*
 - 9.1. The vehicle is equipped to be driven in right-hand/left hand traffic*
 10. Range of vehicle dimensions (overall):
 - 10.1 For chassis without bodywork
 - 10.1.1. Width†:
 - 10.1.1.1. Maximum permissible width:
 - 10.1.1.2. Minimum permissible width:
 - 10.1.2. Length:**
 - 10.1.2.1. Maximum permissible length:**
 - 10.1.2.2. Minimum permissible length:**
 - 10.1.3. Height:**
 - 10.1.3.1. Maximum permissible height:**
 - 10.1.3.2. Minimum permissible height:**
 - 10.2. For chassis with bodywork:
 - 10.2.1. Width†
 - 10.2.2. Length**
 - 10.2.3. Height**
 11. Bodywork
 - 11.1. **Means of rear visibility or detection** ~~Devices for indirect vision:~~ **Direct vision, Devices approved to UN Regulation No. 46, Close Proximity Rear-view Mirror complying with this Regulation, Rear-View Camera System complying with this Regulation, Detection System complying with this Regulation‡.**
 - 11.1.1. Direct vision,**

* Strike out what does not apply.

† "Overall width" of a vehicle means a dimension which is measured according to ISO standard 612-1978, term No. 6.2. In the case of vehicles of category other than M₁, in addition to the provisions of that standard, when measuring the vehicle width the following devices shall not be taken into account:

- (a) Customs sealing devices and their protection;
- (b) Devices for securing the tarpaulin and their protection;
- (c) Tyre failure tell-tale devices;
- (d) Protruding flexible parts of a spray-suppression system;
- (e) Lighting equipment;
- (f) For buses, access ramps in running order, lifting platforms and similar equipment in running order provided that they do not exceed 10 mm from the side of the vehicle and the corners of the ramps facing forwards or rearwards are rounded to a radius of not less than 5 mm; the edges shall be rounded to a radius of not less than 2.5 mm;
- (g) Devices for indirect vision;
- (h) Tyre-pressure indicators;
- (i) Retractable steps;
- (j) The deflected part of the tyre walls immediately above the point of contact with the ground.

‡ Strike out what does not apply.

- 11.1.1.1. **Drawing(s)/photograph(s) showing the direct vision relative to the vehicle structure:**
- 11.1.2. **Devices approved to UN Regulation No. 46,**
- 11.1.2.1. **Type approval number(s) of the device(s) approved according UN Regulation No. 46**
- 11.1.2.2. **Class(es) of mirrors and devices for indirect vision (I, II, III, IV, V, VI)**
- 11.1.2.3. **Drawing(s) showing the position(s) of the device(s) relative to the vehicle structure:**
- 11.1.3. **Close Proximity Rear-view Mirror complying with this Regulation,**
- 11.1.3.1. **Drawing(s) showing the position(s) of the mirror relative to the vehicle structure:**
- 11.1.3.2. **Details of the method(s) of attachment including that part of the vehicle structure to which it is attached:**
- 11.1.3.3. **Optional equipment which may affect the rearward field of vision:**
- 11.1.3.4. **A brief description of the electronic components (if any) of the adjustment device:**
- 11.1.4. **Rear-View Camera System complying with this Regulation.**
- 11.1.4.1. **Drawing(s)/photograph(s) showing the position(s) of the camera(s) relative to the vehicle structure:**
- 11.1.4.2. **Drawing(s)/photograph(s) showing the arrangement of the monitor(s) including surrounding interior parts:**
- 11.1.4.3. **Drawing(s)/photograph(s) showing the drivers view onto the monitor(s):**
- 11.1.4.4. **Drawing(s)/photograph(s) showing the setup and monitor image of the required field of view:**
- 11.1.4.5. **Details of the method(s) of attachment of the Rear-View Camera System including that part of the vehicle structure to which it is attached:**
- 11.1.4.6. **Optional equipment which may affect the rearward field of vision:**
- 11.1.4.7. **A brief description of the electronic components (if any) of the adjustment device:**
- 11.1.4.8. **A technical specification and operator's manual of the Rear-View Camera System:**
- 11.1.5. **Detection System complying with this Regulation.**
- 11.1.5.1. **Drawing(s)/photograph(s) showing the position(s) of the sensor(s) relative to the vehicle structure:**
- 11.1.5.2. **Information signal: audible, optical, haptics[§].**
- 11.1.5.3. **A technical specification and operator's manual of the detection System:**
- ~~11.1.1. Mirrors~~
- ~~11.1.1.1. Drawing(s) showing the position(s) of the mirror relative to the vehicle structure:~~
- ~~11.1.1.2. Details of the method(s) of attachment including that part of the vehicle structure to which it is attached:~~
- ~~11.1.1.3. Optional equipment which may affect the rearward field of vision:~~

[§] Strike out what does not apply.

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

- 11.1.2. Devices for indirect vision other than mirrors: _____
- 11.1.2.1. Sufficiently detailed drawings with the installation instructions: _____
- 11.1.2.2. In the case of Rear View Camera System: _____
- 11.1.2.2.1. Drawing(s)/photograph(s) showing the position(s) of the camera(s) relative to the vehicle structure: _____
- 11.1.2.2.2. Drawing(s)/photograph(s) showing the arrangement of the monitor(s) including surrounding interior parts: _____
- 11.1.2.2.3. Drawing(s)/photograph(s) showing the drivers view onto the monitor(s): _____
- 11.1.2.2.4. Drawing(s)/photograph(s) showing the setup and monitor image of the required field of view: _____
- 11.1.2.2.5. Details of the method(s) of attachment of the Rear View Camera System including that part of the vehicle structure to which it is attached: _____
- 11.1.2.2.6. Optional equipment which may affect the rearward field of vision: _____
- 11.1.2.2.7. A brief description of the electronic components (if any) of the adjustment device:

- 11.1.2.2.8. A technical specification and operator's manual of the Rear View Camera System:
1"

Annex 3, amend to read:

"Annex 3

Communication

(Maximum format: A4 (210 x 297 mm))



issued by:

Name of administration:

.....

- Concerning:²
- Approval granted
 - Approval extended
 - Approval refused
 - Approval withdrawn
 - Production definitively discontinued

of a type of device (**Separate Technical Unit**) for means of rear visibility reversing motion pursuant to UN Regulation No. [158]

Approval No. Extension No.

- 1. Trade name or mark of device:
- ...

¹ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulations).

² Strike out what does not apply.

16. The list of documents deposited with the Type Approval Authority which has granted approval is annexed to this communication and may be obtained on request."

Annex 4, amend to read:

"Annex 4

Communication

(Maximum format: A4 (210 x 297 mm))



issued by :

Name of administration:

.....

Concerning:² Approval granted
 Approval extended
 Approval refused
 Approval withdrawn
 Production definitively discontinued

of a type of vehicle with regard to the ~~mounting of~~ **means of rear visibility or detection devices for reversing motion** pursuant to UN Regulation No. [158]

Approval number: Extension No.:

1. Make (trade name of manufacturer):

...

15. The index to the information package lodged with the Type Approval Authority, which may be obtained on request is attached."

Annex 4 – Appendix, amend to read:

"Annex IV - Appendix

Appendix to type approval communication form No. concerning the type approval of a vehicle with regard to the ~~mounting of~~ **means of rear visibility or detection devices for reversing motion** under UN Regulation No. [158].

1. Trade name or mark of **means of rear visibility or detection mirrors and supplementary devices for indirect vision** and component type-approval number (if applicable):
2. **Means of rear visibility or detection: Direct vision, Devices approved to UN Regulation No. 46, Close Proximity Rear-view Mirror complying with this Regulation, Rear-View Camera System complying with this Regulation, Detection System complying with this Regulation¹** ~~Close proximity rear view mirrors and devices for reversing motion.~~
3. Extension of type approval of the vehicle to cover the following **means of rear visibility or detection device for indirect vision**
4. Data for identification of the R point of the driver's seating position:
5. Maximum and minimum bodywork width, **length and height** in respect of which the ~~mirror and the devices for indirect vision has~~ **means of rear visibility or detection have** been granted type-approval

¹ Strike out what does not apply.

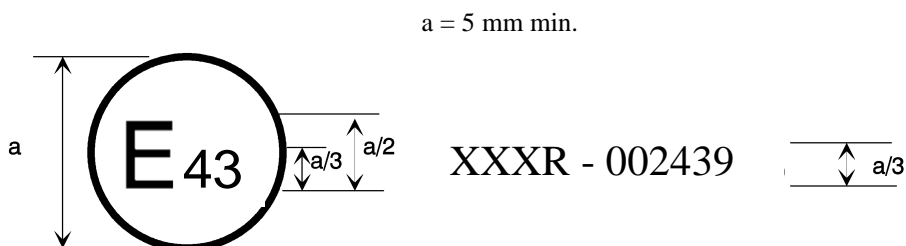
6. The following documents, bearing the type approval number shown above, are annexed to this certificate **(if applicable)**:
- Drawings showing the mounting(s) of the devices for **means of rear visibility or detection** ~~indirect vision~~
 - Drawings and plans showing the mounting position(s) and characteristics of the part of the structure where the devices for **means of rear visibility or detection** ~~indirect vision~~ are mounted.
 - Drawings and plans showing the visual obstructions which affect the rear visibility, e.g. the interior fittings, glazing, etc.**
7. Remarks: (e.g. valid for right hand/left hand traffic¹)"

Annex 5, amend to read:

"Annex 5

Arrangement of approval mark of a device for **means of rear visibility** ~~indirect vision~~

(See paragraph 5.4. of the Regulation)



The above approval mark affixed to a device for **means of rear visibility** ~~indirect vision~~ indicates that the device is a main Close-proximity rear-view device, which has been approved in Japan (E 43) pursuant to UN Regulation No. [158] and under approval number 002439. The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of UN Regulation No. [158] in its original form.

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 shall be on the same side of the "E" and point in the same direction. The additional symbol shall be directly opposite the approval number. The use of Roman numerals as approval numbers shall be avoided so as to prevent any confusion with other symbols."

II. Justification

- The wording used in the regulation text to name the devices or means required to be installed in a vehicle was not harmonized. "Devices for reversing safety", "devices for reversing motion", "devices for indirect vision", "means of vision", "means of awareness" were used and introduced confusions. To reduce confusions, the wording used has been harmonized and is now consistent in the whole text.
- Justification for paragraph 2.1.: This regulation requires to provide means of vision or means of detection. It should be reflected in the definition regarding "devices for reversing safety"
- Justification for paragraphs 3.4. and 4.2.: The part I of the regulation only deals with mirror component approval.

4. Justification for paragraphs 6.2, 6.2.1. and 6.2.1.1.: As the part I of the regulation only deals with mirror component approval, it is not relevant to keep the electromagnetic requirements in this regulation section.
 5. Justification for paragraph 15.4.1.2.: The amendment aims at allowing the approval of devices at different installation locations. It is also clarified that the requirement applies for the field of detection too.
 6. Justification for paragraphs 15.4.1.3. and 15.4.1.4.: It is clarified that the requirement applies for the field of detection too.
 7. Justification for paragraph 16.1.1.3.: clarifications with no additional requirement. It is clarified that the rear-view image shall be visible until the backing event is finished.
 8. Justification for paragraph 16.1.2.1.: It is a correction that clarifies the requirement.
 9. Justification for paragraph 16.4.: the electromagnetic requirements that have been removed from section I of the regulation have been added to the list of requirements for the rear-view camera system
 10. Justification for paragraph 17.1.: clarifications with no additional requirement. It is clarified that the detection shall be active until the backing event is finished.
 11. Justification for paragraph 17.2.2.: it is clarified that the audible information type may differ according to the vehicle distance to the target.
 12. Justification for paragraph 17.2.3.: grammatical corrections
 13. Justification for paragraph 17.4.: the electromagnetic requirements that have been removed from section I of the regulation have been added to the list of requirements for the detection system
 14. Justification for Annex 1: The information document describes the device approved according to the part I of the regulation (component section). And the part I of the regulation only deals with mirror component approval. The annex I has been modified accordingly.
 15. Justification for Annex 2: The information document describes the devices installed to comply with this regulation. As different type of devices or combinations of devices are allowed, the annex 2 has been updated to identify which devices have been used to comply with the regulation.
 16. Justification for Annex 4 - Appendix: The appendix to the type approval communication form describes the devices installed to comply with this regulation. As different type of devices or combinations of devices are allowed, the appendix of the annex 4 has been updated to identify which devices have been used to comply with the regulation.
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