

Proposal for a draft amendment to UN Regulation No. 86 (Installation of lighting and light-signalling devices for agricultural vehicles)

The text reproduced below was prepared by the experts from CEMA with the aim to:

- take into account vehicles of categories R or T with a width wider than 2,55 m and category S vehicles with a width wider than 3 m;
- use reflective materials as an alternative to retro-reflectors and side-marker lamps;
- use amber special warning devices to inform of slow vehicles on the road;
- introduce the use of manufacturer logos.

It intends also to provide some editorial corrections. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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I. Proposal

Add a new definition 2.2.13. to read:

"2.2.13. "Special warning lamp" means a light used to draw the attention of other road users to the presence of a tractor or self-propelled machine (e.g. beacon)"

Definition 2.4.1., correct to read:

"2.4.1. *"Illuminating surface of a lighting device"* (main-beam headlamp, dipped-beam headlamp, front fog lamp, reversing lamp and cornering lamp) means the orthogonal projection of the full aperture of the reflector, or in the case of headlamps with an ellipsoidal reflector of the "projection lens", on a transverse plane. If the lighting device has no reflector, the definition of paragraph 2.54.2. shall be applied. If the light-emitting surface of the lamp extends over part only of the full aperture of the reflector, then the projection of that part only is taken into account.

In the case of a dipped-beam headlamp, the illuminating surface is limited by the apparent trace of the cut-off on to the lens. If the reflector and lens are adjustable relative to one another, the mean adjustment should be used."

Paragraph 3.2.5., amend to read:

"3.2.5. A statement of the method used for the definition of the apparent surface (see paragraph 2.405.)."

Insert a new paragraph 3.3. to read:

"3.3. An unladen vehicle fitted with a complete set of lighting and signalling equipment and representative of the vehicle type to be approved shall be submitted to the Technical Service conducting approval tests."

Insert a new paragraph 5.5.5. to read:

"5.5.5. In case of lamps incorporating a manufacturer logo, only lateral logos (equally shared between left and right side and up to the maximum number of rear position lamps installed on the vehicle) or one central logo can be fitted on the rear of the vehicle and only lateral logos (equally shared between left and right side and up to the maximum number of front position lamps installed on the vehicle) or one central logo can be fitted on the front of the vehicle. All logos that are not vehicle manufacturer or body manufacturer logos are prohibited."

Paragraph 5.14., amend to read:

"5.14. The colours of the light emitted by the lamps¹ are the following:

- Main-beam headlamp: White
- Dipped-beam headlamp: White
- Front fog lamp: White or selective yellow
- Reversing lamp: White
- Direction-indicator lamp: Amber
- Hazard warning signal: Amber
- Stop lamp: Red
- Rear registration plate illuminating device: White
- Front position lamp: White
- Rear position lamp: Red
- Rear fog lamp: Red
- Parking lamp: White in front, red at the rear, amber if reciprocally incorporated in the side direction indicator lamps or in the side-marker lamps.
- Side-marker lamp: Amber; however the rearmost side-marker lamp can be red if it is grouped or combined or reciprocally incorporated with the rear position lamp, the rear end-outline marker lamp, the rear fog lamp, the stop lamp or is grouped or has part of the light-emitting surface in common with the rear retro-reflector.
- End-outline marker lamp: White in front, red at the rear.
- Daytime running lamp: White
- Rear retro-reflector, triangular: Red
- Rear retro-reflector, non-triangular: Red
- Front retro-reflector, non-triangular: White or colourless
- Side retro-reflector, non-triangular: Amber; however the rearmost side retro-reflector can be red if it is grouped or has part of the light-emitting surface in common with the rear position lamp, the rear end outline marker lamp, the rear fog lamp, the stop-lamp, the red rearmost side-marker lamp or the rear retro-reflector, non-triangular.

¹ Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation.

Cornering lamp: White

Conspicuity marking: White or yellow to the side; Red or yellow to the rear.

Exterior courtesy lamp: White

Manoeuvring lamp: White

Signalling panel or signalling foil: White and red

Special warning lamps (e.g. beacon): Amber”

Insert a new paragraph 5.22. to read:

"5.22. All lamps (devices) shall, where applicable, be type approved according to the corresponding device UN Regulations as specified in the relevant subparagraphs of paragraph 6. of this Regulation when installed on a vehicle.

5.22.1. Especially in case of light-signalling lamps incorporating a manufacturer logo, the lamp shall be type approved according to the requirements of the UN Regulation No 148. Existing approvals according to UN Regulations replaced by UN Regulation No 148 are accepted."

Paragraph 6.2.5., amend to read:

"6.2.5. Geometric visibility: Defined by angles α and β
 $\alpha = 15^\circ$ upwards and 10° downwards,
 $\beta = 45^\circ$ outwards and 5° inwards.

Notwithstanding provisions of paragraph 5.17 and related subparagraphs, within this field, ~~virtually the whole~~ **at least 90 %** of the apparent surface of the lamp shall be visible.

The presence of partitions or other items of equipment near the headlamp shall not give rise to secondary effects causing discomfort to other road users."

Paragraph 6.4.4.2., amend to read:

"6.4.4.2. Height: Not less than 250 mm and not more than 1,200 mm above the ground.

However, if the shape, structure, design or operational conditions of the vehicle makes it impossible to keep the lamp within 1,200 mm it is allowed to keep the lamp within a maximum height of 4,000 mm.

In the latter case the lamp shall be installed with ~~a~~ downwards inclination of

At least 3° for a mounting height larger than 2,000 mm and not more than 3,000 mm

and

At least 6° for a mounting height larger than 3,000 mm and within a maximum height of 4,000 mm.

No inclination is needed for mounting height up to 2,000 mm."

Paragraph 6.5.8., amend to read:

"6.5.8. Operating tell-tale:

Mandatory for all direction-indicator lamps not directly visible to the driver. It may be optical or audible or both.

If it is optical, it shall be a green flashing light which, in the event of the malfunction of any of the direction-indicator lamps other than the repeating side direction-indicator lamps or the side-marker lamps when flashing, is either extinguished, or remains alight without flashing, or shows a marked change of frequency.

If it is entirely auditory, it shall be clearly audible and shall show a marked change of frequency in the event of any malfunction.

If a tractor is equipped to tow a trailer, it shall be equipped with a special optical operating tell-tale for the direction indicator lamps on the trailer unless the tell-tale of the drawing vehicle allows the failure of any one of the direction-indicator lamps on the tractor combination thus formed to be detected.

In order to allow detection by the tractor of the failure of any LED direction-indicator lamps installed on the trailer, these devices, when fitted, shall be compliant to the requirements specified in ISO 13207-1:2012."

Paragraph 6.8., amend to read:

"6.8. Front position lamps (UN Regulation No. 7 or 148)

6.8.1. Presence:

Mandatory on all vehicles of category T.

Mandatory on all vehicles of categories R and S exceeding 1,600 mm in overall width.

Optional on other vehicles of categories R and S.

The front position lamps may be omitted if end-outline marker lamps are installed and meet all the installation requirements for front position lamps.

6.8.2. Number:

Two or ~~four~~ **more** (see paragraph 6.8.4.2.).

6.8.3. Arrangement:

No individual specifications. **If more than two front position lamps are fitted, at least one pair of front position lamps shall be fixed.**

6.8.4.	Position	
6.8.4.1.	Width:	<p>For at least one pair of front position lamps, That point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall be not more than 400 mm from the extreme outer edge of the vehicle. The clearance between the respective inner edges of the two illuminating surfaces shall be not less than 500 mm.</p> <p>For at least one pair of front position lamps the distance between the inner edges of the two illuminating surfaces shall be not less than 500 mm. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,400 mm.</p> <p>Additional pairs of front position lamps shall not be set special requirements related to the distance between the inner edges of the two apparent surfaces in the direction of the reference axes.</p>
6.8.4.2.	Height:	<p>Above the ground, For at least one pair of front position lamps not less than 400 mm and not more than 2,500 mm above the ground.</p> <p>For additional pairs of front position lamps, not more than 4,000 mm above the ground.</p>
6.8.4.3.	Length:	No specifications provided that the lamps are aligned forwards and the angles of geometrical visibility specified in paragraph 6.8.5. are complied with.
6.8.5.	Geometric visibility:	<p>The single pair or the combination of all pairs of rear position lamps shall fulfil the following requirements:</p> <p>Horizontal angle: For the two front position lamps: 10° inwards and 80° outwards. However, the angle of 10° inwards may be reduced to 5° if the shape of the bodywork makes it impossible to keep to 10°. For vehicles with any overall width not exceeding 1,400 mm this angle may be reduced to 3° if the shape of the bodywork makes it impossible to keep to 10°.</p> <p>Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 10° if the height of the lamp above the ground is less than</p>

1,900 mm, and to 5° if this height is less than 750 mm.

- 6.8.6. Orientation: Towards the front.
- 6.8.7. Electrical connections: No individual specifications (see paragraph 5.11.).
However, if a front position lamp is reciprocally incorporated with a direction-indicator, the electrical connection of the front position lamp on the relevant side of the vehicle or the reciprocally incorporated part of it may be such that it is switched off during the entire period (both ON and OFF cycle) of activation of the direction-indicator lamp.
- 6.8.8. Tell-tale: Mandatory. This tell-tale shall be non-flashing. It shall not be required if the instrument panel lighting can only be turned on simultaneously with the front position lamps."

Paragraph 6.9., amend to read:

- "6.9. Rear position lamps (UN Regulation No. 7 or 148)
- 6.9.1. Presence: Mandatory.
The rear position lamps may be omitted if end-outline marker lamps are installed and meet all the installation requirements for rear position lamps.
- 6.9.2. Number: Two or more (~~see paragraphs 6.9.4.3. and 6.9.5.1.~~).
- 6.9.3. Arrangement: No individual specifications. If ~~four more than two~~ rear position lamps ~~according to paragraph 6.9.5.1.~~ are fitted, at least one pair of rear position lamps shall be fixed.
- 6.9.4. Position
- 6.9.4.1. Width: ~~Except as provided in paragraph 6.9.5.1.~~ **For at least one pair of rear position lamps,** that point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall be not more than 400 mm from the extreme outer edge of the vehicle.
For at least one pair of rear position lamps, the distance between the inner edges of the two illuminating surfaces shall be not less than 500 mm. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,400 mm.

Additional pairs of rear position lamps shall not be set special requirements related to the distance between the inner edges of the two apparent surfaces in the direction of the reference axes.

6.9.4.2. Height: ~~Except as provided in paragraph 6.9.5.1. For~~ **at least one pair of rear position lamps, above the ground not less than 400 mm and not more than 2,500 mm above the ground.**

For vehicles with a maximum overall width not exceeding 1,300 mm, ~~above the ground~~ not less than 250 mm **above the ground.**

For additional pairs of rear position lamps, not more than 4,000 mm above the ground.

6.9.4.3. Length: ~~At the rear of vehicle. At least one pair of rear position lamps shall~~ **not be more than 1,000 mm from the rearmost point of the vehicle.**

~~Parts of the vehicle that extend the rearmost point of the illuminating surface of the rear position lamps by more than 1,000 mm shall be fitted with an additional rear position lamp.~~

6.9.5. Geometric visibility: **The single pair or the combination of all pairs of rear position lamps shall fulfil the following requirements:**

Horizontal angle: ~~For the two rear position lamps:~~ either 45° inwards and 80° outwards, or 80° inwards and 45° outwards. The horizontal inward angle may be reduced to 30° if the shape of the bodywork makes it impossible to reach 45°.

Vertical angle: 15° above and below the horizontal. The angle below the horizontal may be reduced to 10° if the height of the lamp above the ground is less than 1,900 mm, and to 5° if this height is less than 750 mm.

~~6.9.5.1. If it is impossible to observe the above position and/or visibility requirements, four rear position lamps may be fitted in accordance with the following installation specifications:~~

~~6.9.5.1.1. Two rear position lamps shall keep within the maximum height of 2,500 mm above the ground.~~

~~A distance of at least 300 mm between the interior edges of the rear position lamps shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.~~

~~6.9.5.1.2. The other two shall keep within a maximum height of 4,000 mm above the ground and shall be bound by the requirements of paragraph 6.9.4.1.~~

~~6.9.5.1.3. The combination of the two pairs shall meet the requirements for geometric visibility as specified in 6.9.5. above.~~

6.9.6. Orientation: Towards the rear.

6.9.7. Electrical connections: No individual specifications (see paragraph 5.11.).

However, if a rear position lamp is reciprocally incorporated with a direction-indicator, the electrical connection of the rear position lamp on the relevant side of the vehicle or the reciprocally incorporated part of it may be such that it is switched OFF during the entire time (both ON and OFF cycle) of activation of the direction-indicator lamp.

6.9.8. "Circuit closed" tell-tale: Mandatory. It shall be combined with that of the front position lamps."

Paragraph 6.12.2., amend to read:

"6.12.2. Number: Two visible from the front and/or two visible from the rear.

Optional: additional lamps may be fitted as follows:

- (a) Two visible from the front;
- (b) Two visible from the rear."

Paragraph 6.14., amend to read:

"6.14. Rear retro-reflectors, non-triangular (UN Regulation No. 3 **or 104** or 150)

6.14.1. Presence: Mandatory on vehicles of category T. Optional on vehicles of categories R and S in addition to **paragraph 6.25.**

6.14.2. Number: Two or ~~four~~ **more** (see paragraph 6.14.5.1).

The performances of these devices shall conform to the requirements concerning:

- Class IA or IB retro-reflectors in UN Regulation No. 3 or 150; **or**
- **retro-reflective materials in UN Regulation 104 or 150.**

Additional retro-reflecting devices and materials (including ~~two~~ retro-reflectors not complying with paragraph 6.14.4. below), are permitted provided they do not impair the

effectiveness of the mandatory lighting and light-signalling devices.

- 6.14.3. Arrangement: No individual specifications.
- 6.14.4. Position
- 6.14.4.1. Width: ~~Except as provided in paragraph 6.14.5.1~~ **For at least one pair of rear retro-reflectors** the point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall be not more than 400 mm from the extreme outer edge of the vehicle.
- In case one single pair of rear retro-reflectors is fitted, the distance between** ~~t~~^{The inner edges of the retro-reflectors} ~~these devices~~ shall be not less than 600 mm ~~apart~~. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,300 mm.
- In case that more than one pair of rear retro-reflectors are fitted, for at least one pair a distance of at least 300 mm between the interior edges shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.**
- If signalling panels or signalling foils are fitted, according to the requirements given in paragraph 6.26., the single pair or the combination of pairs of rear retro-reflectors do not need to comply with the location requirements set out in the first subparagraph.**
- 6.14.4.2. Height: **For at least one pair of rear retro-reflectors** ~~Except as provided in paragraph 6.14.5.1,~~ not less than 400 mm and not more than 900 mm above the ground.
- For vehicles with a maximum overall width not exceeding 1,300 mm above the ground not less than 250 mm.
- However, the upper limit may be increased to not more than 1,250 mm if it is impossible to keep within the height of 900 mm without having to use fixing devices liable to be easily damaged or bent.
- For additional pairs of rear retro-reflectors, not more than 2,500 mm above the ground.**
- When the reflectors are mounted in addition to **paragraph 6.25.**, they shall keep within a

		height between 400 mm and 4,000 mm above the ground.
6.14.4.3.	Length:	No individual specifications.
6.14.5.	Geometric visibility:	The single pair or the combination of all pairs of rear retro-reflectors lamps shall fulfil the following requirements: Horizontal angle: 30° inwards and outwards. Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5° if the height of the reflector is less than 750 mm.
6.14.5.1.		If it is impossible to observe the above position and visibility requirements, four retro-reflectors may be fitted in accordance with the following installation specifications:
6.14.5.1.1.		Two retro-reflectors shall keep within the maximum height of 900 mm above the ground. However, this upper limit may be increased to not more than 1,500 mm where the shape, structure, design or operational conditions of the vehicle compliance with 900 mm makes it impossible to comply with 900 mm limit, without having to use fixing devices liable to be easily damaged or bent.
		A distance of at least 300 mm between the interior edges of the rear retro-reflectors shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.
6.14.5.1.2.		The other two shall keep within a maximum height of 2,500 mm above the ground and shall be bound by the requirements of paragraph 6.14.4.1.
6.14.5.1.3		The combination of the two pairs shall meet the requirements for geometric visibility as specified in 6.14.5. above.
6.14.6.	Orientation:	Towards the rear.
6.14.7.	Other requirements:	The illuminating surface of the retro-reflector may have parts in common with that of any other rear lamp."

Paragraph 6.15., amend to read:

"6.15.	Side retro-reflectors, non-triangular (UN Regulation No. 3 or 104 or 150)	
6.15.1.	Presence:	Mandatory on all vehicles the length of which exceeds 4,6 m. Optional on all other vehicles. Optional on all vehicles where conspicuity markings according to paragraph 6.21. are fitted.

6.15.2.	Number:	<p>Such that the requirements for longitudinal positioning are complied with. The performances of these devices shall conform to the requirements concerning:</p> <ul style="list-style-type: none"> - Class IA or IB retro-reflectors in UN Regulation No. 3 or 150; or - retro-reflective materials in UN Regulation 104 or 150. <p>Additional retro-reflecting devices and materials (including two retro-reflectors not complying with paragraph 6.15.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.</p>
6.15.3.	Arrangement:	<p>The reflecting surface shall be mounted in a vertical plane (maximum deviation 10°) parallel to the longitudinal axis of the vehicle.</p>
6.15.4.	Position	
6.15.4.1.	Width:	No individual specification.
6.15.4.2.	Height:	<p>Not less than 400 mm and not more than 900 mm above the ground.</p> <p>However, the upper limit may be increased to not more than 2,500 mm if it is impossible to keep within the height of 900 mm without having to use fixing devices liable to be easily damaged or bent.</p>
6.15.4.3.	Length:	<p>One reflector shall be not more than 3 m from the foremost point of the vehicle, and either the same reflector or a second reflector shall be not more than 3 m from the rearmost point of the vehicle. For vehicles of category R and S the distance between the rearmost side retro-reflector and the rear of the vehicle shall not exceed 1 m.</p> <p>The distance between two reflectors on the same side of the vehicle shall not exceed 3 m. If the structure, design or the operational use of the vehicle makes it impossible to comply with such a requirement, this distance may be increased to 4 m.</p>
6.15.5.	Geometric visibility:	<p>Horizontal angle: 20° forwards and rearwards.</p> <p>Vertical angle: 10° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5° if the height above the ground of the reflector is less than 750 mm.</p>

6.15.6. Orientation: Towards the side. Where the orientation does not change, the reflector may rotate"

Paragraph 6.17., amend to read:

"6.17. Front retro-reflectors, non-triangular (UN Regulation No. 3 or 104 or 150)

6.17.1. Presence: Optional on vehicles of category T.
Mandatory on vehicles of categories R and S.
Optional on vehicles where signalling panels or signalling foils according to **paragraph 6.26.** are installed.

6.17.2. Number: Two or ~~more~~ **four.**

6.17.3. Arrangement: No ~~special requirement~~ **individual specifications.**

6.17.4. Position

6.17.4.1. Width: **For at least one pair of front retro-reflectors, That** the point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall not be more than 400 mm from the extreme outer edge of the vehicle. For vehicles of category R and S this distance shall not be more than 150 mm.

In case one single pair of front retro-reflectors is fitted, the distance between the inner edges of ~~these devices the two apparent surfaces in the direction of the reference axes~~ shall be not less than 600 m. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,300 mm.

In case that more than one pair of front retro-reflectors are fitted, for at least one pair a distance of at least 300 mm between the inner edges shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.

If signalling panels or signalling foils are fitted, according to the requirements given in paragraph 6.26., the single pair or the combination of pairs of front retro-reflectors do not need to comply with the location requirements set out in the first subparagraph.

6.17.4.2. Height: ~~Above the ground~~ **In case one single pair of front retro-reflectors is fitted, not less than 300 mm nor more than 1,500 mm above the ground.**

If this is not possible due to the design the front reflectors shall be arranged as low as possible.

In case that more than one pair of front retro-reflectors are installed, at least one pair shall be bound by the requirements set in the first subparagraph.

For additional pairs of front retro-reflectors, not more than 2,500 mm above the ground.

- 6.17.4.3. Length: At the front of the vehicle.
- 6.17.5. Geometric visibility: **The single pair or the combination of all pairs of front retro-reflectors lamps shall fulfil the following requirements:**
- Horizontal angle: 30° inwards and outwards.
- Vertical angle: 10° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5° in the case of a retro-reflector less than 750 mm above the ground.
- ~~6.17.5.1. If it is impossible to observe the above position and visibility requirements, four front retro reflectors may be fitted in accordance with the following installation specifications:~~
- ~~6.17.5.1.1. If fitted, two reflectors shall keep within the maximum height of 1,200 mm above the ground.~~
- ~~A distance of at least 300 mm between the interior edges of the front retro reflectors shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.~~
- ~~6.17.5.1.2. The other two shall keep within a maximum height of 2,500 mm above the ground and shall be bound by the requirements of paragraph 6.17.4.1.~~
- ~~6.17.5.1.3. The combination of the two pairs shall meet the requirements for geometric visibility as specified in paragraph 6.17.5.~~
- 6.17.6. Orientation: Towards the front.
- 6.17.7. Other requirements: The illuminating surface of the retro-reflector may have parts in common with the apparent surface of any other lamp situated at the front."

Paragraph 6.18.1., amend to read:

- "6.18.1. Presence: Mandatory on all vehicles of categories T exceeding 4,6 m in length.

Mandatory on all vehicles of categories R having a sum of the axle loads above 3,5 t and exceeding 4,6 m in length.

Optional on vehicles the length of which exceeds 4,6 m when conspicuity marking according to paragraph 6.21 are fitted.

Optional on all other vehicles."

Paragraph 6.19.7.1., amend to read:

"6.19.7.1.

The daytime running lamps shall be switched ON automatically when the device which starts and/or stops the engine is in a position which makes it possible for the engine to operate. However, daytime running lamps may remain OFF while the automatic transmission control is in the park or neutral position, while the parking brake is applied or after the propulsion system is activated but the vehicle was not set in motion for the first time.

The daytime running lamps shall switch OFF automatically when the front fog lamps ~~or headlamps~~ are switched ON, ~~except when the latter are used to give intermittent luminous warnings at short intervals.~~ **If the headlamps are ON, the daytime running lamps may keep ON or ON with a reduced intensity.**

Furthermore, any of the lamps referred to in paragraph 5.11. may be switched ON when the daytime running lamps are switched ON."

Paragraph 6.22.1., amend to read:

"6.22.1. Presence:

Optional on vehicles with a maximum design speed of not more than 430 km/h. Prohibited on all other vehicles."

Paragraph 6.25., amend to read:

"6.25. Rear retro-reflectors, triangular (UN Regulation No. 3 **or 104** or 150)

6.25.1. Presence:

Mandatory on vehicles of categories R and S. Prohibited on vehicles of category T.

6.25.2. Number:

Two or ~~four~~ **more** (see paragraph 6.25.5.1.).

The performances of these devices shall conform to the requirements concerning:

- Class IIIA or IIIB retro-reflectors in UN Regulation No. 3 or 150; or

- retro-reflective materials in UN Regulation 104 or 150.

Additional retro-reflecting devices and materials (including retro-reflectors not

complying with paragraph 6.25.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.

6.25.3. Arrangement: The apex of the triangle shall be directed upwards.

6.25.4. Position

6.25.4.1. Width: ~~Except as provided in paragraph 6.25.5.1~~ For at least one pair of rear retro-reflectors the point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall be not more than 400 mm from the extreme outer edge of the vehicle.

In case one single pair of rear retro-reflectors is fitted, the distance between ~~t~~The inner edges of ~~the retro-reflectors~~ these devices shall be not less than 600 mm ~~apart~~. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,300 mm.

In case that more than one pair of rear retro-reflectors are fitted, for at least one pair a distance of at least 300 mm between the interior edges shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.

If signalling panels or signalling foils are fitted, according to the requirements given in paragraph 6.26., the single pair or the combination of pairs of rear retro-reflectors do not need to comply with the location requirements set out in the first subparagraph.

6.25.4.2. Height: ~~Except as provided in paragraph 6.25.5.1~~ For at least one pair of rear retro-reflectors, not less than 400 mm and not more than 1,500 mm above the ground.

For vehicles with a maximum overall width not exceeding 1,300 mm not less than 250 mm above the ground.

However, the upper limit may be increased to not more than 1,2500 mm if it is impossible to keep within the height of 900 mm without having to use fixing devices liable to be easily damaged or bent.

For additional pairs of rear retro-reflectors, not more than 2,500 mm above the ground.

6.25.4.3.	Length:	No individual specifications.
6.25.5.	Geometric visibility:	<p>The single pair or the combination of all pairs of rear retro-reflectors lamps shall fulfil the following requirements:</p> <p>Horizontal angle: 30° inwards and outwards.</p> <p>Vertical angle: 15° above and below the horizontal. The vertical angle below the horizontal may be reduced to 5° if the height of the reflector is less than 750 mm.</p>
6.25.5.1.		If it is impossible to observe the above position and visibility requirements, four retro-reflectors may be fitted in accordance with the following installation specifications:
6.25.5.1.1.		Two retro-reflectors shall keep within the maximum height of 900 mm above the ground. However, this upper limit may be increased to not more than 1,2500 mm if it is impossible to keep within the height of 900 mm without having to use fixing devices liable to be easily damaged or bent.
		A distance of at least 300 mm between the interior edges of the reflectors shall be observed, and they shall have a vertical angle of visibility above the horizontal of 15°.
6.25.5.1.2.		The other two shall keep within a maximum height of 2,500 mm above the ground and shall be bound by the requirements of paragraph 6.25.4.1.
6.25.6.	Alignment:	Towards the rear.
6.25.7.	Other requirements:	The illuminating surface of the retro-reflector may have parts in common with that of any other rear lamp."

Insert a new paragraph 6.27. to read:

"6.27.	Special warning lamps (UN Regulations No. 65)	
6.27.1.	Presence:	Optional.
6.27.2.	Number:	One or more to meet the visibility requirements.
6.27.3.	Arrangement:	It shall be such that the visibility requirements are satisfied.
6.27.4.	Position	
	Width:	As required to meet the visibility requirements.
	Height:	As required to meet the visibility requirements.

- Length:** As required to meet the visibility requirements.
- 6.27.5. Geometric visibility:** Defined by angles α and β
 α : 8° above the horizontal; below the horizontal, the lamp shall light up the ground 50 m from the periphery of the machine.
 β : 360° outwards.
- 6.27.6. Alignment:** All around.
- 6.27.7. Electrical connections:** The lamp(s) shall switch on independently of the machine.
- 6.27.8. Tell-tale:** Optional."

Annex 1, amend to read:

“Annex 1

Communication

(Maximum format: A4 (210 x 297))



issued by: Name of Administration:

Concerning:³ Approval granted
 Approval extended
 Approval refused
 Approval withdrawn
 Production definitively discontinued

of a type of agricultural or forestry vehicle with regard to the installation of lighting and light-signalling devices pursuant to UN Regulation No. 86.

Approval No. Extension No.

1. Make (trade name)
2. Vehicle type and commercial description classification

² Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

³ Strike out what does not apply.

3. Manufacturer's name and address
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4. If applicable, name and address of manufacturer's representative
5. Lighting equipment installed on the vehicle submitted for approval.^{1,4}.....
- 5.1. Main-beam headlamps: yes/no²
- 5.2. Dipped-beam headlamps: yes/no²
- 5.3. Front fog-lamps: yes/no²
- 5.4. Reversing lamps: yes/no²
- 5.5. Front direction-indicator lamps: yes/no²
- 5.6. Rear direction-indicator lamps: yes/no²
- 5.7. Repeating side indicator lamps: yes/no².....
- 5.8. Hazard-warning signal: yes/no²
- 5.9. Stop lamps: yes/no².....
- 5.10. Rear registration plate illuminating device: yes/no².....
- 5.11. Front position lamps: yes/no²
- 5.12. Rear position lamps: yes/no²
- 5.13. Rear fog-lamps: yes/no³
- 5.14. Parking lamps: yes/no².....
- 5.15. End-outline marker lamps: yes/no³
- 5.16. Rear retro-reflectors, non-triangular: yes/no³.....
- 5.17. Work lamps: yes/no²
- 5.18. Side retro-reflectors, non-triangular: yes/no²
- 5.19. Front retro-reflectors, non-triangular: yes/no².....
- 5.20. Side-marker lamps: yes/no².....
- 5.21. Daytime running lamps: yes/no³
- 5.22. Cornering lamps: yes/no³
- 5.23. Conspicuity markings: yes/no².....
- 5.24. Manoeuvring lamps: yes/no².....
- 5.25. SMV rear marking plate: yes/no².....
- 5.26. Exterior courtesy lamps: yes/no³.....
- 5.27. Signalling panels or signalling foils: yes/no³
- 5.28. Rear retro-reflectors, triangular: yes/no³
- 5.29. Special warning lamps: yes/no³**

⁴ Show for each device, on a separate form, the types of devices, duly identified, meeting the installation requirements of this Regulation.

- Lamps
- ~~5.29~~**30.** approved for and equipped with LED substitute light source(s) are allowed to be installed on this vehicle type: yes/no^{2,5}
6. Equivalent lamps: yes/no² (see paragraph 2.632.1.)
7. Maximum technically permissible width of the vehicle:
- 8. Comments:**
- ~~89.~~ Vehicle submitted for approval on
- ~~910.~~ Technical Service responsible for conducting approval tests
-
- ~~1011.~~ Date of report issued by that service
- ~~1112.~~ Number of report issued by that service
- ~~1213.~~ Approval with regard to the lighting and light-signalling devices is granted/extended/refused/withdrawn³
- ~~1314.~~ Position of approval mark on vehicle.....
-
- ~~1415.~~ Place
- ~~1516.~~ Date
- ~~1617.~~ Signature
- ~~1718.~~ Remarks

II. Justification

1. There are some editorial errors which should be corrected, mainly in the numbering of the definitions.
2. It was decided to introduce requirements for amber special warning devices, which are used to inform of slow vehicles on the road, in order to start setting harmonised requirements and to limit / reduce diverging national requirements;
3. Requirements for manufacturers logo should be introduced as proposed for motor vehicles. The drafting is based on the final proposal agreed during the eighty-fifth session of GRE (according to doc. GRE 85-26);
4. The criteria for the geometric visibility of dipped-beam headlamps wording were clarified; in particular, the wording “virtually the whole” was reviewed to provide a practical approach and avoid diverging interpretations.
5. Requirements for the detection of the failure of LED direction indicator lamps of a trailer in a tractor were added.
6. Requirements on front / rear position lamps, front / rear retro-reflectors were adapted to take into account vehicles which are wider than 2,55 m (categories R and T) or wider than 3 m (category S).

⁵ If yes, list the applicable lamps.

7. The possibility to use retroreflective materials as an alternative to retro-reflectors.
 8. Conspicuity marking should be recognised as an alternative to side marker lamps.
 9. Requirements on daytime running lamps should be amended to reflect the requirements of R48.
 10. This amendment introduces the necessary changes into UN Regulation No. 86.
 11. In case the technical changes induced by this amendment would generate a new series of amendments, we suggest to combine the content of this amendment to the one under preparation to take into account the consideration of the 01 series of amendments of UN Regulations Nos. 148, 149 and 150 (see ECE/TRANS/WP.29/GRE/2023/6).
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