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Item 4.6.9 of the provisional agenda

**1958 Agreement – Consideration of draft amendments
to existing Regulations submitted by GRE**

Proposal for the 01 series of amendments to Regulation No. 86 (Installation of lighting and light-signalling devices for agricultural vehicles)

Submitted by the Working Party on Lighting and Light-Signalling*

The text reproduced below was adopted by the Working Party on Lighting and Light-Signalling (GRE) at its seventy-fifth session (ECE/TRANS/WP.29/GRE/75, para. 41). It is based on ECE/TRANS/WP.29/GRE/2016/16 not amended. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.1 for consideration at their November 2016 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

01 series of amendments to Regulation No. 86 (Installation of lighting and light-signalling devices for agricultural vehicles)

Table of contents, amend to read:

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** Page numbers will be added at a later stage.

Paragraph 1., amend to read:

"1. Scope

This Regulation applies to vehicles of category T, R and S,¹ with regard to the installation of lighting and light-signalling devices."

Paragraph 2.8.2., delete.

Insert a new paragraph 2.20.3., to read:

"2.20.3. "Signalling panel or signalling foil" means a device used to indicate to other road users the presence of a wide or long vehicle when viewed from the front, rear or side."

Paragraph 4.2., amend to read:

"4.2. An approval number shall be assigned to each type approved. Its first two digits (at present 01, corresponding to the 01 series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments to the Regulation. The same Contracting Party may not assign the same number to another vehicle type or to the same vehicle type submitted with equipment not specified in the list referred to in paragraph 3.2.2. above subject to paragraph 7. of this Regulation."

Paragraph 5.1.1., amend to read:

"5.1.1. Vehicles must be fitted with the permanently connected socket outlet specified in ISO standard 1724:2003 (Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7 pole connector type 12 N (normal) for vehicles with 12 V nominal supply voltage), or ISO 1185:2003 (Road vehicles -- Connectors for the electrical connection of towing and towed vehicles -- 7-pole connector type 24 N (normal) for vehicles with 24 V nominal supply voltage) or both when they have a connection for attaching trailed vehicles or mounted machines."

Paragraph 5.9.1., amend to read:

"5.9.1. Direction-indicator lamps and the vehicle-hazard warning signal shall be flashing lamps. Amber side-marker lamps may be flashing lamps."

Paragraph 5.14., amend to read:

"5.14. The colours of the light emitted by the lamps² 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

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.) (ECE/TRANS/WP.29/78/Rev.4)

² Measurement of the chromaticity coordinates of the light emitted by the lamps is not part of this regulation.

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.

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"

Paragraph 6.1.1., amend to read:

"6.1.1.	Presence:	Mandatory for vehicles of category T having a maximum design speed of more than 40 km/h. Optional on other vehicles of category T. Prohibited on vehicles of categories R and S."
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Paragraph 6.2.1., amend to read:

"6.2.1.	Presence:	Mandatory on vehicles of category T. Prohibited on vehicles of categories R and S."
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Paragraph 6.3.1., amend to read:

"6.3.1.	Presence:	Optional on vehicles of category T. Prohibited on vehicles of categories R and S."
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Paragraph 6.5.1., amend to read:

- "6.5.1. Presence: Mandatory. Types of indicators fall into categories (1, 1a, 1b, 2a, 2b, 5 and 6) the assembly of which on one tractor constitutes an arrangement (A to D).
- Arrangement A and D shall be allowed only on vehicles of category T whose overall length does not exceed 4,600 mm and in the case of which the distance between the outer edges of the illuminating surfaces is not more than 1.60 m.
- Arrangements B and C shall apply to all vehicles of category T.
- For vehicles of categories R and S category 2a lamps shall be used.
- Additional direction-indicator lamps optional."

Paragraph 6.5.3., amend to read:

- "6.5.3. Arrangement: The number, position and horizontal visibility of the indicator lamps shall be such that they can give indications corresponding to at least one of the arrangements defined below (see also Annex 5). The angles of visibility are hatched on the diagrams; the angles shown are minimum values which may be exceeded; all the angles of visibility are measured from the center of the illuminating surface.
- 6.5.3.1. For vehicles of category T: "A" Two front direction-indicator lamps (category 1, 1a or 1b),
Two rear direction-indicator lamps (category 2a).
- These lamps may be independent, grouped or combined.
- "B" Two front direction-indicator lamps (category 1, 1a or 1b),
Two repeating side direction-indicator lamps (category 5 or 6),
Two rear direction-indicator lamps (category 2a).
- The front and repeating side lamps may be independent, grouped, or combined.
- "C" Two front direction-indicator lamps (category 1, 1a or 1b),
Two rear direction-indicator lamps (category 2a),

Two repeating side indicator lamps
(category 5 or 6)

"D" Two front direction-indicator lamps
(category 1, 1a or 1b),

Two rear direction-indicator lamps
(category 2a).

6.5.3.2. For vehicles of categories R and S: Two rear direction-indicator lamps
(category 2a) with angles of geometric
visibility according to Arrangement B,
C or D."

Paragraph 6.5.4.3., amend to read:

"6.5.4.3. Length: The distance between the center of reference
of illuminating surface of the category 1
indicator (arrangement "B"), category 5 or 6
indicator (arrangement "B" and "C") and the
transverse plane which marks the forward
boundary of the tractor's overall length
normally shall not exceed 1,800 mm. If the
structure of the tractor makes it impossible to
keep to the minimum angles of visibility, this
distance may be increased to 2,600 mm."

Paragraph 6.7.5., amend to read:

"6.7.5. Geometric visibility: Horizontal angle: 45° outwards and inwards.
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 vertical angle below the horizontal may
be reduced to 10° or 5° where the lamp has
its H plane at or below 1,900 mm
respectively 950 mm from the ground."

Paragraph 6.8.1., amend to read:

"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 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."

Paragraph 6.9.5., first indent, amend to read:

"6.9.5. Geometric visibility: 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°.

..."

Paragraph 6.9.7., amend to read:

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

Paragraph 6.9.8., amend to read:

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

Paragraph 6.12.1., amend to read:

"6.12.1. Presence: Mandatory on vehicles exceeding 2,550 mm in width. Optional on vehicles between 1,800 mm and 2,550 mm in width."

Paragraph 6.12.2., amend to read:

"6.12.2. Number: Two visible from the front and 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 6.12.4.2., amend to read:

"6.12.4.2. Height: At the maximum height compatible with the requirements relating to the width, design and operational requirements of the vehicle and to the symmetry of the lamps.

Both optional and mandatory (as applicable) lamps to be fitted as far separated in height as practicable and compatible with design/operational requirements of the vehicle and symmetry of the lamps."

Paragraph 6.14.1., amend to read:

"6.14.1. Presence: Mandatory on vehicles of category T. Prohibited on vehicles of categories R and S."

Paragraph 6.14.2., amend to read:

"6.14.2. Number: Two or four (see paragraph 6.14.5.1.).

The performances of these devices shall conform to the requirements concerning Class IA or IB retro-reflectors in Regulation No. 3. 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."

Paragraph 6.15.1., amend to read:

"6.15.1. Presence: Mandatory on vehicles of category T the length of which exceeds 6 m and on all vehicles of categories R and S.

Optional on tractors the length of which does not exceed 6 m."

Paragraph 6.15.4.3., amend to read:

"6.15.4.3. Length: One reflector must be not more than 3 m from the foremost point of the vehicle, and either the same reflector or a second reflector must 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.

The distance between two reflectors on the same side of the vehicle must 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."

Paragraph 6.17.1., amend to read:

"6.17.1. Presence: Optional on vehicles of category T. Mandatory on vehicles of categories R and S."

Paragraph 6.17.4.1., amend to read:

"6.17.4.1. Width: That point on the illuminating surface which is farthest from the vehicle's median longitudinal plane shall not be more than 400 mm and for vehicles of category R and S not more than 150 mm from the extreme outer edge of the vehicle.

The distance between the inner edges of the two apparent surfaces in the direction of the reference axes shall be not less than 600 mm. This distance may be reduced to 400 mm where the overall width of the vehicle is less than 1,300 mm."

Insert new paragraphs 6.17.5.1.2 . and 6.17.5.1.3., to read:

"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."

Paragraph 6.18.1., amend to read:

"6.18.1. Presence: Mandatory on all vehicles of categories T and R exceeding 6 m in length.
Optional on all other vehicles."

Paragraph 6.19.1., amend to read:

"6.19.1. Presence: Optional on vehicles of category T.
Prohibited on vehicles of categories R and S."

Paragraph 6.20.1., amend to read:

"6.20.1. Presence: Optional on vehicles of category T.
Prohibited on vehicles of categories R and S."

Paragraph 6.23.1., amend to read:

"6.23.1. Presence: Optional on vehicles of category T.
Prohibited on vehicles of categories R and S."

Paragraph 6.24.1., amend to read:

"6.24.1. Presence: Optional on vehicles of category T.
Prohibited on vehicles of categories R and S."

Insert a new paragraph 6.25., to read:

"6.25. Rear retro-reflectors, triangular (Regulation No. 3)

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 (see paragraph 6.25.5.1.).

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. 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. The inner edges of the retro-reflectors 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.

6.25.4.2. Height: Except as provided in paragraph 6.25.5.1., not less than 400 mm and not more than 1,500 mm above the ground.

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

- 6.25.4.3. Length: No individual specifications.
- 6.25.5. Geometric visibility: 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.
- 6.25.5.1. 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 must keep within the maximum height of 900 mm above the ground. However, this upper limit may be increased to not more than 1,200 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 must be observed, and they must 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 6.26., to read:

- "6.26. Signalling panel and signalling foil (Regulations Nos. 70 and 104)
- 6.26.1. Presence: Mandatory on vehicles exceeding 2,550 mm in width.
Optional on vehicles of category S not exceeding 2,550 mm in width.
- 6.26.2. Number: Two or four (Annex 6).
- 6.26.3. Arrangement: According to the specifications of Annex 6.
- 6.26.4. Position
- Width: That point on the illuminating surface of at least one entire basic standard area which is farthest from the vehicle's median longitudinal plane shall not be more than 100 mm from the extreme outer edge of the vehicle. This value may be increased if the

		shape of the bodywork makes it impossible to keep within 100 mm.
	Height:	No individual specifications.
	Length:	No individual specifications.
6.26.5.	Geometric visibility:	No individual specifications.
6.26.6.	Alignment:	Towards the front and the rear."

Insert a new paragraph 12., to read:

"12. Transitional provisions

- 12.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 01 series of amendments.
- 12.2. As from 24 months after the date of entry into force of the 01 series of amendments, Contracting Parties applying this Regulation shall grant type approvals only if the vehicle type to be approved meets the requirements of this Regulation as amended by the 01 series of amendments.
- 12.3. Contracting Parties applying this Regulation shall not refuse to grant extensions of type approvals for existing types which have been granted according to the preceding series of amendments to this Regulation.
- 12.4. Until 24 months after the date of entry into force of the 01 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse national or regional type approval of a vehicle type approved to the preceding series of amendments to this Regulation.
- 12.5. As from 24 months after the date of entry into force of the 01 series of amendments to this Regulation, Contracting Parties applying this Regulation shall not be obliged to accept, for the purpose of national or regional type approval, a vehicle type approved to the preceding series of amendments to this Regulation.
- 12.6. Notwithstanding the transitional provisions above, Contracting Parties whose application of this Regulation comes into force after the date of entry into force of the 01 series of amendments are only obliged to accept type approval granted in accordance with the 01 series of amendments."

Annex 1,

Item 5.16., amend to read:

"5.16. Rear retro-reflectors, non-triangular: yes/no³....."

Item 5.21., amend to read:

"5.21. Daytime running lamps: yes/no³....."

Item 5.22., amend to read:

"5.22. Cornering lamps: yes/no³....."

Insert new items 5.26. to 5.28., to read:

"5.26. Exterior courtesy lamps: yes/no³....."

"5.27. Signalling panels or signalling foils: yes/no³"

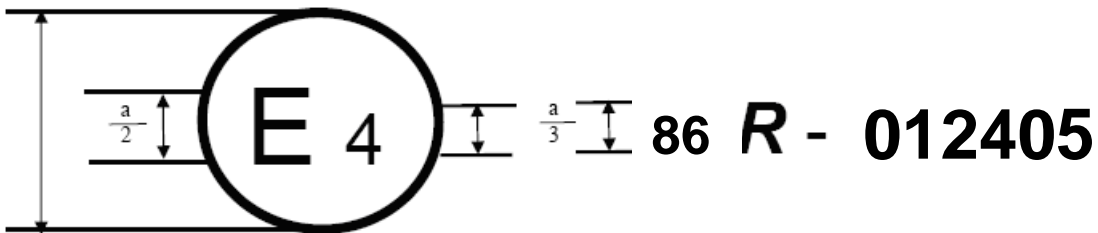
"5.28. Rear retro-reflectors, triangular: yes/no³"

Annex 2, amend to read:

"Annex 2

Examples of arrangements of approval marks

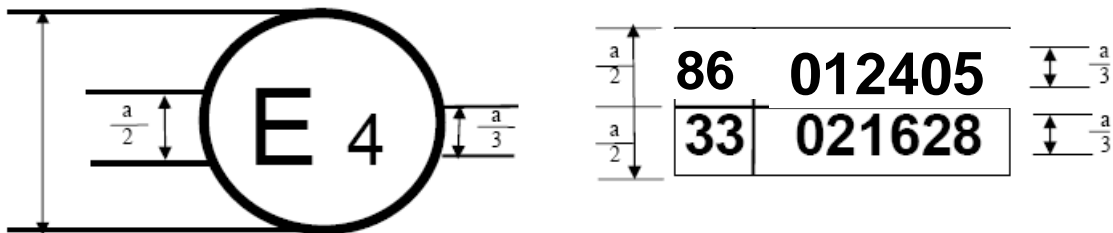
Model A
(See paragraph 4.4. of this Regulation)



a = 8 mm min.

The above approval mark affixed to an agricultural or forestry vehicle shows that the vehicle type concerned has, with regard to the installation of lighting and light-signalling devices, been approved in the Netherlands (E 4) pursuant to Regulation No. 86. The approval number indicates that the approval was granted in accordance with the requirements of Regulation No. 86 as amended by the 01 series of amendments.

Model B
(See paragraph 4.5. of this Regulation)



a = 8 mm min.

The above approval mark affixed to an agricultural or forestry vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to Regulations Nos. 86 and 33*. The approval numbers indicate that, at the dates when the respective approvals were given, Regulation No. 86 was as amended by the 01 series of amendments and Regulation No. 33 already included the 02 series of amendments."

* The latter number is given merely as an example.

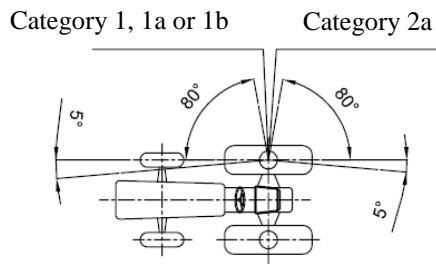
Annex 5, amend to read:

"Annex 5

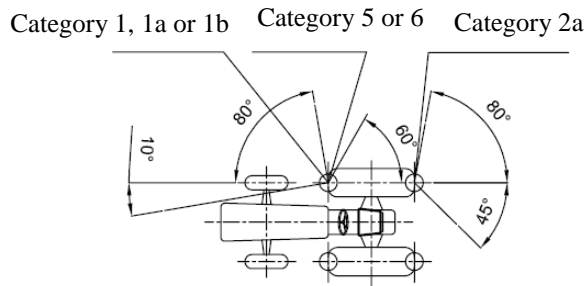
Direction-indicator lamps - Geometric visibility

(see paragraph 6.5.54.)

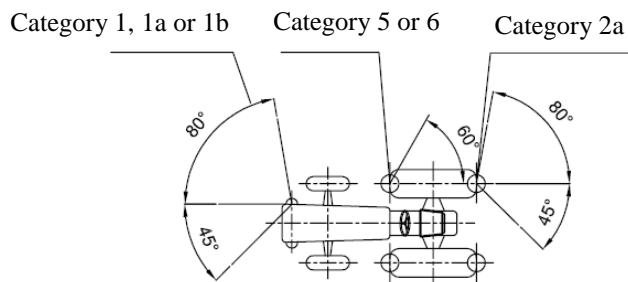
Arrangement A

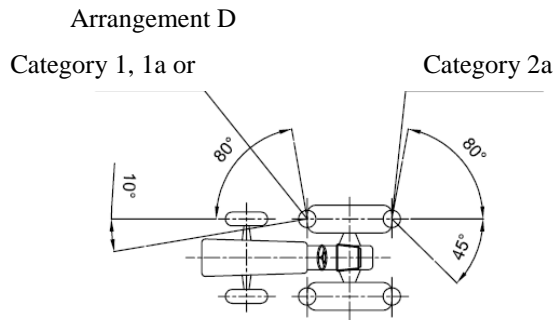


Arrangement B



Arrangement C





For all the arrangements the following applies:

The value 10° given for the inward angle of visibility of the front indicator may be reduced to 3° for vehicles with an overall width not exceeding 1,400 mm.

For rear direction indicators, the horizontal inward angle may be reduced to 30° if the shape of the bodywork makes it impossible to reach 45°."

Insert a new Annex 6, to read:

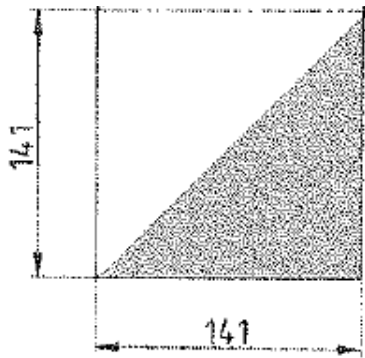
"Annex 6

Signalling panels and signalling foils

- 1. Dimensions, arrangement, number and minimum reflecting surface
- 1.1. Signalling panels and signalling foils shall have the following dimensions:

Figure 1.

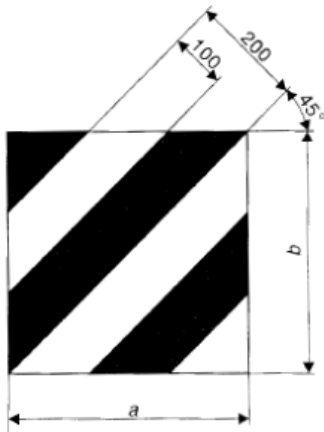
Basic standard area



Dimensions in mm

Figure 2.

Signalling panel or signalling foil



Dimensions in mm

Table 1
Dimensions [mm]

<i>Signalling panel or signalling foil</i>	<i>a [mm]</i>	<i>b [mm]</i>	<i>Surface [cm²]</i>
Form A	423	423	1,790
Form B	282	282	795
Form R1	282	423	1,193
Form R2	423	282	
Form L1	141	846	1,193
Form L2	846	141	
Form K1	141	423	596
Form K2	423	141	

Deviations from the specified formats are permitted, provided that:

- (a) The visible surface of each panel or foil shall be at least equal to 4 basic standard areas and
- (b) Each panel or foil shall comprise at least 3 entire basic standard areas.

If the structure, design or the operational use of the vehicle makes it impossible to comply with such a requirement, each panel or foil may be split into 2 parts as long as each part comprises at least 2 entire basic standard areas.

1.2. Arrangement

The panels or foils shall be arranged in a way that their stripes shall run under 45° outwards and downwards.

Table 2
Number of panels or foils visible from the front and from the rear

<i>Signalling panel or signalling foil</i>	<i>Number visible from the front</i>	<i>Number visible from the rear</i>
Form A	2	2
Form B	2	2
Form R1	2	2
Form R2		
Form L1	2	2
Form L2		
Form K1	4	4
Form K2		

2. Colours and photometric minimum requirements

Each panel or foil shall be according to the specifications of Regulation No. 70, class 5 or Regulation No. 104, class F."