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Collective amendments - UN Regulations Nos. 53 and 113

### Proposal for Collective amendments to Regulations Nos. 53 and 113

Submitted by the expert from the International Motor Vehicles Association\*

The text reproduced below was prepared by the expert from the International Motor Vehicles Association (IMMA) and supported by the expert from the Working Party "Brussels 1952" (GTB) in order to introduce bend lighting for motorcycles. It is based on the informal documents GRE-65-05 and GRE-65-06. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), 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.

## I. Proposal

### Regulation No. 53, Supplement 14 to the 01 series of amendments:

*Insert new paragraph 2.5.7.1., to read:*

"2.5.7.1. **"Principal passing beam (principal dipped beam)" means the dipped beam produced without the contribution of infrared (IR) emitters and/or additional light sources for bend lighting.**"

*Paragraph 2.7.1., to read:*

"2.7.1. "Illuminating surface of a lighting device" (paragraphs. 2.5.6., 2.5.7. and 2.5.15.) means ...

... , the mean adjustment should be used;

**In the case where any combination of a headlamp producing the principal passing beam and additional lighting units or light sources designed to produce bend lighting are operated together, the individual illuminating surfaces, taken together, constitute the illuminating surface."**

*Insert new paragraph 2.30., to read:*

"2.30. **"Bend lighting" means a lighting function to provide enhanced illumination in bends.**"

*Paragraph 6.1.3.1.2., amend to read:*

"6.1.3.1.2. a driving beam headlamp, that is reciprocally incorporated with another front lamp, must be fitted in such a way that its reference centre lies within the median longitudinal plane of the vehicle. However, when the vehicle is also fitted with an independent **principal** passing beam headlamp, or a **principal** passing beam headlamp that is reciprocally incorporated with a front position lamp alongside the driving beam headlamp, their reference centres must be symmetrical in relation to the median longitudinal plane of the vehicle."

*Paragraph 6.1.3.3., amend to read:*

"6.1.3.3. In any case, the distance between the edge of the ~~illumination~~ **illuminating** surface of any independent driving lamp and the edge of that of the **lamp producing the principal** passing ~~lamp~~ beam must not exceed 200 mm. The distance between the edge of the illuminating surface of any independent driving lamp and the ground must be from 500 mm to 1,300 mm."

*Paragraphs 6.2.3.1.1. to 6.2.3.1.3., amend to read:*

"6.2.3.1.1. an independent passing lamp may be installed above, below or to one side of another front lamp: if these lamps are one above the other the reference centre of **the lamp producing the principal** passing ~~lamp~~ beam must be located within the ~~medium~~ **median** longitudinal plane of the vehicle; if these lamps are side by side their reference centre must be symmetrical in relation to the median longitudinal plane of the vehicle.

6.2.3.1.2. A **headlamp producing the principal** passing beam ~~headlamp~~, that is reciprocally incorporated with another front lamp, must be fitted in such a way that its reference centre lies within the median longitudinal plane of the vehicle. However, when the vehicle is also fitted with an independent driving

beam headlamp, or a driving beam headlamp that is reciprocally incorporated with a front position lamp alongside the **headlamp producing the principal passing beam headlamp**, their reference centres must be symmetrical in relation to the median longitudinal plane of the vehicle.

- 6.2.3.1.3. Two **headlamps producing the principal passing beam lamps**, of which either one or both are reciprocally incorporated with another front lamp must be installed in such a way that their reference centres are symmetrical in relation to the median longitudinal plane of the vehicle."

*Insert new paragraph 6.2.3.1.4., to read:*

- "6.2.3.1.4. If installed, additional lighting unit(s) which provide bend lighting, type approved as part of the passing beam according to Regulation No. 113, shall be installed under the following conditions:**

**In the case of (a) pair(s) of additional lighting units, they shall be installed so that their reference centre(s) are symmetrical in relation to the median longitudinal plane of the vehicle.**

**In the case of a single additional lighting unit, its reference center shall be coincident with the medium longitudinal plane of the vehicle."**

*Paragraph 6.2.3.4., amend to read:*

- "6.2.3.4. In the case of two **headlamps producing the principal passing lamps beam** the distance separating the illuminating surfaces must not exceed 200 mm."

*Paragraphs 6.2.5.2. to 6.2.5.4, amend to read:*

- "6.2.5.2. The vertical inclination of the **headlamp producing the principal passing beam headlamp** must remain between -0.5 and -2.5 per cent, except in the case where an external adjusting device is present.
- 6.2.5.3. For **headlamp producing the principal passing beam headlamps** with a light source having an objective luminous flux which exceeds 2,000 lumen, the vertical inclination of the headlamp shall remain between -0.5 and -2.5 per cent. A headlamp levelling device may be used to satisfy the requirements of this paragraph but its operation shall be automatic. 4/
- 6.2.5.4. The requirement in paragraph 6.2.5.3. shall be tested on the vehicle in the following conditions:  
Condition A (rider alone):  
 A mass of 75 kg ± 1 kg , ... for this loading condition.  
 The vertical inclination (initial aiming) of the **headlamp producing the principal passing beam headlamp** shall be set, following the manufacturer's instructions, between -1.0 and -1.5 per cent.  
Condition B (fully laden motorcycle):  
 masses, ...for this loading condition.  
 Before making the measurements, ... at least a complete wheel revolution."

*Insert new paragraphs 6.2.5.7.to 6.2.5.8., to read:*

- "6.2.5.7. Additional light source(s) or additional lighting unit(s) may be activated only in conjunction with the principal passing beam to produce bend lighting. The illumination provided by the bend lighting shall not extend**

above the horizontal plane, that is parallel with the ground and containing the reference axis of the headlamp producing the principal passing beam for all bank angles as specified by the manufacturer during type approval of the device according to Regulation No.113.”

**6.2.5.8.** The requirement in paragraph 6.2.5.7. shall be tested as follows:

The test vehicle shall be set as specified in paragraph 5.4.

Measure the bank angles on both sides of the vehicle under every condition where the bend lighting is activated. The bank angles to measure are the bank angles specified by the manufacturer during type approval of the device according to Regulation No. 113.

The handlebar may be fixed in the straight ahead position so as not to move during the vehicle inclination.

For the test, the bend lighting may be activated by means of a signal generator provided by the manufacturer.

The system is considered to satisfy the requirements of paragraph 6.2.5.7., if all measured bank angles on both sides of the vehicle are greater than or equal to the minimum bank angles given in the communication form for the type approval of the device according to Regulation No 113.

Conformity to paragraph 6.2.5.7. may be demonstrated by the manufacturer using other means accepted by the authority responsible for type approval.”

*Insert new paragraph 6.2.6.1., to read:*

**"6.2.6.1.** The additional light source(s) or additional lighting unit(s) used to produce bend lighting shall be so connected that it (they) cannot be activated unless the headlamp(s) producing the principal passing beam is(are) also activated.

The additional light source(s) or additional lighting unit(s) used to produce bend lighting on each side of the vehicle may only be automatically activated when the bank angle(s) is(are) greater or equal to the minimum bank angle(s) given in the communication form for the type approval of the device according to Regulation No. 113.

However, the additional light source(s) or additional lighting unit(s) shall not be activated when the bank angle is less than 5 degrees.”

The additional light source(s) or additional lighting unit(s) shall be deactivated when the bank angle(s) is (are) less than the minimum bank angle(s) given in the communication form for the type approval of the device according to Regulation No. 113.”

*Insert new paragraph 6.2.8.3., to read:*

**"6.2.8.3.** In the event of a control system failure, additional light source(s) or additional lighting unit(s) producing bend lighting shall be switched OFF automatically.”

*Paragraph 6.3.3.1., amend to read:*

**"6.3.3.1.** In width: For front indicators, the following requirements shall all be met:

(a) ...,

- (b) the indicators shall be situated outside the longitudinal vertical plane tangential to the outer edges of the illuminating surface of the ~~headlamp(s)~~ **driving beam(s) and/or principal passing beam(s)**,
- (c) there shall be a minimum distance between the illuminating surface of the indicators and **headlamp producing the principal passing beam** ~~headlamp~~ closest to one another as follows:

Minimum indicator intensity (cd)	Minimum separation (mm)
90	75
175	40
250	20
400	≤ 20

For rear indicators, ... when the registration plate is mounted;"

### Regulation No. 113, Supplement 2 to the 01 series of amendments:

*Insert new paragraph 1.9.*, to read:

- "1.9. "Additional lighting unit" means the part of a headlamp system that provides the bend lighting. It is independent from the device that provides the principal passing beam, may consist of optical, mechanical and electrical components, and it may be grouped and/or reciprocally incorporated with other lighting or light-signalling devices. "

*Paragraph 1.9.(former)*, renumber as paragraph 1.10.

*Insert new paragraph 2.1.6.*, to read:

- "2.1.6. **For additional lighting unit(s), the additional lighting unit identification code(s), if any.**"

*Paragraph 2.2.1.*, amend to read:

- "2.2.1. Drawings in triplicate in sufficient detail to permit identification of the type and representing a frontal view of the headlamp, with details of lens ribbing if any, and the cross-section; the drawings shall indicate the space reserved for the approval mark **and, if applicable**,
- (a) **in the case of LED module(s), the drawings shall indicate also** the space(s) reserved for the specific identification code(s) of the module(s)
- (b) **in the case of additional lighting unit(s), the space(s) reserved for the specific identification code(s) on the additional lighting unit(s) and the headlamp(s) producing the principal passing beam;**
- (c) **In the case of additional lighting unit(s), the geometrical conditions of installation of the device(s) that meet the requirements of paragraph 6.2.8."**

*Insert new paragraph 2.2.2.3.*, to read:

"2.2.2.3. In the case of a headlamp designed to provide bend lighting, the minimum bank angle(s) to satisfy the requirement of paragraph 6.2.8.1."

*Insert new paragraph 3.9., to read:*

"3.9. In the case of additional lighting unit(s), the headlamps producing the principal passing beam shall bear specific identification code of the additional lighting unit(s) mentioned in paragraph 3.10.2. below."

*Insert new paragraphs 3.10. to 3.10.3., to read:*

"3.10. Additional lighting unit(s) shall bear the following markings:

3.10.1. The trade name or mark of the applicant. This marking shall be clearly legible and indelible.

3.10.2. (a) in the case of filament light source, the category(s) of filament lamp(s), and/or

(b) in the case of LED module(s), the rated voltage and rated wattage and the specific identification code(s) of the LED module(s).

3.10.3. The specific identification code(s) of the additional lighting unit(s). This marking shall be clearly legible and indelible.

This specific identification code shall be comprised of starting letters "ALU" for "Additional Lighting Unit" followed by approval marking without the circle as prescribed in paragraph 4.2.1. below (ex. ALU E43 1234) and in the case where several non identical additional lighting units are used, additional symbols or characters shall follow (ex. ALU E43 1234-A, ALU E43 1234-B). This specific identification code shall be shown in the drawings mentioned in paragraph 2.2.1. above. The approval marking does not have to be the same as the one on the lamp in which the additional lighting unit(s) is used, but both markings shall be from the same applicant."

*Insert new paragraph 5.3., to read:*

"5.3. Class A, B, C or D"

*Paragraphs 5.3. and 5.3.1.(former), renumber as paragraphs 5.3.1 and 5.3.2, and amend to read:*

"5.3.1. Headlamps ~~of class A, B, C or D~~ shall be equipped with filament lamp(s) approved according to Regulation No. 37 and/or, for headlamps of class C or D, with (an) LED module(s).

**In the case of the use of additional light source(s) and/or additional lighting unit(s) to provide bend lighting, only categories of filament lamps covered by Regulation No. 37, provided that no restriction on the use for bending light is made in Regulation No. 37 and its series of amendments in force at the time of application for type approval, and / or LED modules(s) shall be used.**

5.3.2. It is possible to use two filament light sources for the **principal** passing beam and several filament light sources for the driving beam.

Any Regulation No. 37 filament lamp may be used, provided that:

(a) ...

(b) for Class A and B, its reference luminous flux at 13.2V for **principal** dipped-beam does not exceed 900 lm;

(c) for Class C and D, its reference luminous flux at 13.2V for **principal** dipped-beam does not exceed 2,000 lm.

The design of the device shall be such that the filament lamp can be fixed in no other position but the correct one. 1/

The filament lamp holder shall ..."

Paragraphs 5.3.2. and 5.3.2.2.(former), renumber as paragraphs 5.3.3 and 5.3.3.2.

Paragraph 5.3.2.3., renumber as paragraph 5.3.3.3, and amend to read:

"5.3.3.3. The total objective luminous flux of all LED modules producing the **principal** passing beam shall be measured as described in paragraph 5. of Annex 12. The following minimum and maximum limits shall apply:

	Headlamps Class C	Headlamps Class D
<b>Principal</b> passing beam minimum	500 lumen	1000 lumen
<b>Principal</b> passing beam maximum	2000 lumen	2000 lumen

Paragraph 5.4.1., amend to read:

"5.4.1. The headlamp shall be equipped with (a) gas-discharge light source(s) approved according to Regulation No. 99 and/or (an) LED module(s).

**In the case of the use of additional light source(s) and/or additional lighting unit(s) to provide bend lighting, only categories of filament lamps covered by Regulation No. 37, provided that no restriction on the use for bending light is made in Regulation No. 37 and its series of amendments in force at the time of application for type, and / or LED modules(s) shall be used."**

Paragraph 5.4.3.3., amend to read:

"5.4.3.3. The total objective luminous flux of all LED modules producing the **principal** passing beam shall be measured as described in paragraph 5. of Annex 12. The following minimum limit shall apply:

	Headlamps Class E
<b>Principal</b> passing beam minimum	2000 lumen

"

Paragraph 5.7., amend to read:

"5.7. On headlamps designed to provide alternately a driving beam and a passing beam, **or headlamp systems including additional light source(s) and/or additional lighting unit(s) used to produce bend lighting**, any mechanical, electromechanical or other device incorporated in the headlamp for these purposes ~~switching from one beam to the other~~ shall be so constructed that:"

Paragraphs 5.7.2. and 5.7.3., amend to read:

- "5.7.2. **except for additional light source(s) and additional lighting unit(s) used to produce bend lighting**, in the case of failure it must be possible to obtain automatically a passing beam or a state with respect to the photometric conditions which yields values not exceeding 1200 cd in Zone 1 and at least 2400 cd at 0,86D-V by such means as e.g. switching off, dimming, aiming downwards, and/or functional substitution;
- 5.7.3. **except for additional light source(s) and additional lighting unit(s) used to produce bend lighting**, either the passing beam or the driving beam shall always be obtained without any possibility of the mechanism stopping in between the two positions;"

*Insert new paragraph 6.1.6., to read:*

- "**6.1.6. In the case of headlamp systems having additional light source(s) and/or additional lighting unit(s) used to produce bend lighting, the additional light source(s) shall be measured according to the paragraph 6.1.3., 6.1.4. and 6.1.5.**"

*Paragraphs 6.2.1. and 6.2.2., amend to read:*

- "6.2.1. For a correct aiming the **principal** passing beam shall ..... shall be checked on performance.
- 6.2.2. The **principal passing beam headlamp** shall be aimed so that:"

*Paragraph 6.2.7., amend to read:*

- "6.2.7. Either one or two filament light sources (class A, B, C, D) or one gas discharge light source (class E) or one or more LED module(s) (class C, D, E) are permitted for the **principal** passing beam."

*Insert new paragraphs 6.2.8. to 6.2.8.3., to read:*

- "**6.2.8. Additional light source(s) and/or additional lighting unit(s) used to produce bend lighting is (are) permitted, provided that:**
- 6.2.8.1. the following requirement regarding illumination shall be met, when the principal passing beam(s) and corresponding additional light source(s) used to produce bend lighting are activated simultaneously:**
- (a) **Left bank (when the motorcycle is rotated to the left about its longitudinal axis) the luminous intensity values shall not exceed 900cd in the zone extending from HH to 15 deg above HH and from VV to 10 deg left.**
- (b) **Right bank (when the motorcycle is rotated to the right about its longitudinal axis) the luminous intensity values shall not exceed 900cd in the zone extending from HH to 15 deg above HH and from VV to 10 deg right.**
- 6.2.8.2. This test shall be carried out with the minimum bank angle specified by the applicant simulating the condition by means of the test fixture etc.**
- 6.2.8.3. For this measurement, at the request of the applicant, principal passing beam and additional light source(s) used to produce bend lighting, may be measured individually and the photometric values obtained combined to determine compliance with the specified luminous intensity values."**

*Annex 1, item 9., amend to read:*

9. Brief description:

Category as described by the relevant marking 3/:

Number and specific identification code(s) of electronic light source control gear(s), if any: .....

Number and specific identification code(s) of additional lighting unit(s) and for each LED module a statement whether it is replaceable or not, if any: .....

The determination of "cut-off" sharpness yes / no 2/

If yes, it was carried out at 10 m / 25 m 2/

Trade name and identification number of separate ballast(s) or part(s) of ballast(s):

The passing beam light source may/may not 2/ be lit simultaneously with the driving beam light source and/or another reciprocally incorporated headlamp.

**The minimum bank angle(s) to satisfy the requirement of paragraph 6.2.8.1, if any....."**

*Annex 2, insert new figure 16., to read:*

**"Figure 16**

**Additional lighting units designed to provide bend lighting**

**ALU E43 1234**

**The additional lighting unit bearing the identification code shown above has been approved together with a headlamp initially approved in Japan (E43) under approval number 1234"**

*Annex 4, insert new sub paragraphs 1.1.1.1.(e), to read:*

- "1.1.1.1. (a) ...
- (b) ...
- (c) ...
- (d) ...
- (e) **In the case of a headlamp having additional light source(s) used to produce bend lighting, except for additional lighting unit(s), it (they) shall be switched on for one minute, and switched off for nine minutes during the activation of the principal passing beam.**
- If the headlamp has several additional light sources used to produce bend lighting, the test shall be carried out with the combination of light source(s) that represents the most severe operating condition."**

*Annex 8., amend to read:*

"Annex 8

OVERVIEW OF OPERATIONAL PERIODS CONCERNING TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

Abbreviations:

P: passing beam lamp

D: driving beam lamp (D<sub>1</sub> + D<sub>2</sub> means two driving beams)

F: front fog lamp

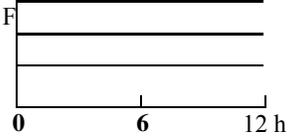
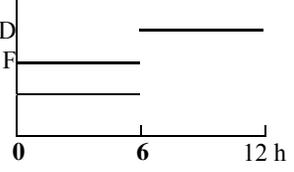
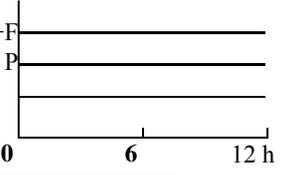
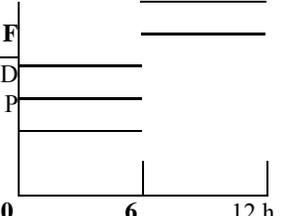
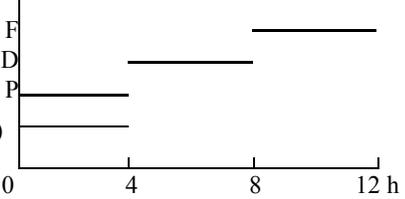
————— : means a cycle of 15 minutes off and 5 minutes lit.

————— : means a cycle of 9 minutes off and 1 minutes lit.

All following grouped headlamps and front fog lamps together with the added class B marking symbols are given as examples and are not exhaustive.

1.	P or D or F (C-BS or R-BS or B)	<b>Additional light source(s) used to produce bend lighting</b>	
2.	P+D (CR-BS) or P+D <sub>1</sub> +D <sub>2</sub> (CR-BS R-BS)	<b>Additional light source(s) used to produce bend lighting</b>	
3.	P+D (C/R-BS) or P+D <sub>1</sub> +D <sub>2</sub> (C/R-BS R-BS)	<b>Additional light source(s) used to produce bend lighting</b>	
4.	P+F (C-BS B)	<b>Additional light source(s) used to produce bend lighting</b>	
5.	P+F (C-BS B/) or C-BS/B	<b>Additional light source(s) used to produce bend lighting</b>	

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6. D+F (R-BS B) or D <sub>1</sub> +D <sub>2</sub> +F (R-BS R-BS B)	<b>Additional light source(s) used to produce bend lighting</b>	
7. D+F (R-BS B/) or D <sub>1</sub> +D <sub>2</sub> +F (R-BS R-BS B/)	<b>Additional light source(s) used to produce bend lighting</b>	
8. P+D+F (CR-BS B) or P+D <sub>1</sub> +D <sub>2</sub> +F (CR-BS R-BS B)	<b>Additional light source(s) used to produce bend lighting</b>	
9. P+D+F (C/R-BS B) or P+D <sub>1</sub> +D <sub>2</sub> +F (C/R-BS R-BS B)	<b>Additional light source(s) used to produce bend lighting</b>	
10. P+D+F (CR-BS B/) or P+D <sub>1</sub> +D <sub>2</sub> +F (CR-BS R-BS B/)	<b>Additional light source(s) used to produce bend lighting</b>	
11. P+D+F (C/R-BS B/) or P+D <sub>1</sub> +D <sub>2</sub> +F (C/R-BS R-BS/B)	<b>Additional light source(s) used to produce bend lighting</b>	

Annex 12, Paragraph 4.3.1.1., amend to read:

"4.3.1.1. A photometric measurement of the headlamp shall be made after 1 minute of operation for the specific function at the test point specified below. For these

measurements, the aim can be approximate but must be maintained for before and after ratio measurements.

Test points to be measured:

**Principal** passing beam 50 V

**(For the measurement of bend lighting, the test point shall be specified by the manufacture.)**

Driving beam H – V"

*Paragraph 5.*, amend to read:

"5. The measurement of the objective luminous flux of LED module(s) producing the **principal** passing beam shall be carried out as follows:

...

The average of the measurements of the three samples of each type of LED module shall be deemed to be its objective luminous flux."

## II. Justification

This proposal introduces the use of additional light source(s) and/or additional light unit(s) producing bend lighting to operate simultaneously with the principal passing beam. This bend lighting is intended to improve forward night-time visibility in the case where a motorcycle is running on a curved road, and due to the banking characteristics, the illumination area of the headlamp is narrowed in the travelling direction. In these conditions the bend lighting will supplement the light distribution of the principal passing beam to maintain a sufficiently wide beam pattern. This effect is similar to HIAS.

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