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World Forum for Harmonization of Vehicle Regulations**Working Party on Lighting and Light-Signalling****Eighty-seventh session**

Geneva, 25–28 October 2022

Item 6 (b) of the provisional agenda

Installation UN Regulations:**UN Regulation No. 53 (Installation of Lighting and Light-Signalling Devices for L₃ Vehicles)****Proposal for a new 04 series of amendments to UN
Regulation No. 53****Submitted by the experts from Czechia and Germany***

This document is a proposal to improve road safety for motorcycles by limiting headlamp classes in UN Regulation No. 53 and to ensure the compatibility with the electric propulsion systems. This proposal is based on ECE/TRANS/WP.29/GRE/2022/3 as amended by informal document GRE-86-15, which was submitted to the eighty-sixth session of the Working Party on Lighting and Light-Signalling (GRE). The proposed modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2022 as outlined in proposed programme budget for 2022 (A/76/6 (Sect.20), para 20.76), 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

Paragraph 6.1.1., amend to read:

"6.1.1. Number:

6.1.1.1. For motorcycles having a cylinder capacity $\leq 125 \text{ cm}^3$ **and a maximum power $\leq 11 \text{ kW}$** (*)

One or two of approved type according to:

- (a) Class C, D or E of Regulation No. 113;
- (b) **Class B of UN Regulation No. 112;**
- ~~(c) Regulation No. 1;~~
- ~~(d)~~(c) Regulation No. 8;
- ~~(e)~~(d) Regulation No. 20;
- ~~(f) Regulation No. 57;~~
- ~~(g) Regulation No. 72;~~
- ~~(h)~~(e) Regulation No. 98;
- ~~(i)~~(f) Class ~~A~~, B, D, CS, DS or ES of UN Regulation No. 149;
- (g) **Class A of the 01 and subsequent series of amendments to UN Regulation No. 149.**

6.1.1.2. For motorcycles having a cylinder capacity $> 125 \text{ cm}^3$ **or a maximum power $> 11 \text{ kW}$** (*)

One or two of approved type according to:

- (a) Class D or E of Regulation No. 113;
- (b) Class B of UN Regulation No. 112;
- ~~(c) Regulation No. 1;~~
- ~~(d)~~(c) Regulation No. 8;
- ~~(e)~~(d) Regulation No. 20;
- ~~(f) Regulation No. 72;~~
- ~~(g)~~(e) Regulation No. 98;
- ~~(h)~~(f) Class ~~A~~, B, D, DS or ES of UN Regulation No. 149.
- (g) **Class A of the 01 and subsequent series of amendments to UN Regulation No. 149.**

Two of approved type according to:

- ~~(i)~~(h) Class C of UN Regulation No. 113;
- ~~(j)~~(i) Class CS of UN Regulation No. 149.

* The power limits are based on maximum continuous rated power for electric propelled vehicles and maximum net power for vehicles propelled with a combustion engine."

Paragraph 6.2.1., amend to read:

"6.2.1. Number:

6.2.1.1. For motorcycles having a cylinder capacity $\leq 125 \text{ cm}^3$ **and a maximum power $\leq 11 \text{ kW}$** (*)

One or two of approved type according to:

- (a) Class C, D or E of Regulation No. 113;
- (b) **Class B** of UN Regulation No. 112;
- ~~(c)~~ ~~Regulation No. 1;~~
- ~~(d)~~(c) Regulation No. 8;
- ~~(e)~~(d) Regulation No. 20;
- ~~(f)~~ ~~Regulation No. 57;~~
- ~~(g)~~ ~~Regulation No. 72;~~
- ~~(h)~~(e) Regulation No. 98;
- ~~(i)~~(f) Class ~~A~~, B, D, CS, DS or ES of UN Regulation No. 149;
- ~~(j)~~(g) Class C or V of the 01 and subsequent series of amendments to UN Regulation No. 149.

6.2.1.2. For motorcycles having a cylinder capacity $> 125 \text{ cm}^3$ **or a maximum power $> 11 \text{ kW}$** (*)

One or two of approved type according to:

- (a) Class D or E of Regulation No. 113;
- (b) Class B of UN Regulation No. 112;
- ~~(c)~~ ~~Regulation No. 1;~~
- ~~(d)~~(c) Regulation No. 8;
- ~~(e)~~(d) Regulation No. 20;
- ~~(f)~~ ~~Regulation No. 72;~~
- ~~(g)~~(e) Regulation No. 98;
- ~~(h)~~(f) Class ~~A~~, B, D, DS or ES of UN Regulation No. 149;
- ~~(i)~~(g) Class C or V of the 01 and subsequent series of amendments to UN Regulation No. 149.

Two of approved type according to:

- ~~(j)~~(h) Class C of UN Regulation No. 113;
- ~~(k)~~(i) Class CS of UN Regulation No. 149."

Insert a new paragraph 11.12. to read:

"11.12. **Transitional provisions applicable to the 04 series of amendments**

11.12.1. **As from the official date of entry into force of the 04 series of amendments, no Contracting Party applying this UN Regulation shall refuse to grant or refuse to accept UN type approvals under this UN Regulation as amended by the 04 series of amendments.**

11.12.2. **As from 1 September [2028], Contracting Parties applying this UN Regulation shall not be obliged to accept UN type approvals to the preceding series of amendments, first issued after 1 September [2028].**

- 11.12.3. **Until 1 September [2030], Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before 1 September [2028].**
- 11.12.4. **As from 1 September [2030], Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.**
- 11.12.5. **Notwithstanding the transitional provisions above, Contracting Parties who start to apply this UN Regulation after the date of entry into force of the most recent series of amendments are not obliged to accept UN type-approvals which were granted in accordance with any of the preceding series of amendments to this UN Regulation.**
- 11.12.6. **Notwithstanding paragraph 11.12.2., Contracting Parties applying this UN Regulation shall continue to accept UN type approvals to the preceding series of amendments to this UN Regulation and extension thereof, for the vehicles which are not affected by the changes introduced by the 04 series of amendments.**
- 11.12.7. **Contracting Parties applying this Regulation may grant type approvals according to any preceding series of amendments to this Regulation.**
- 11.12.8. **Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation."**

II. Justification

1. The objective of this proposal is to introduce amendments to UN Regulation No. 53, to improve road safety for motorcycles by removing specific headlamp classes. This proposal is based on ECE/TRANS/WP.29/GRE/2022/3 as amended by informal document GRE-86-15, submitted by Czechia and Germany, respectively, to the eighty-sixth GRE session in April 2022. For the preparation of this updated version, the comments expressed by Contracting Parties at the GRE session in order to improve the proposal, were taken into consideration.

2. In particular, the introduction of the additional threshold of 11 kW has been enhanced from an editorial and technical perspective, to make the provisions compatible with vehicles equipped with an electric powertrain, by taking as a reference the parameters and terminology used in the relevant global and regional legislation.

3. The current threshold to differentiate low- and high-performance motorcycles is based on the cylinder capacity, which implicitly assumes that the vehicle propulsion system is an internal combustion engine. Considering the technological progress in the field of electrification, it is necessary to adapt this provision to ensure compatibility with electric propulsion systems.

4. For this purpose, the Consolidated Resolution on the Construction of Vehicles (R.E.3) can be taken as a reference. As an alternative to the cylinder capacity, R.E.3 refers to the "maximum net power" for internal combustion engines and to the "maximum continuous rated power" for electric propulsion systems:

"2.1.6. *"Category L6": A vehicle (...), and whose engine cylinder capacity does not exceed 50 cm³ for spark (positive) ignition engines, or whose maximum net power output does not exceed 4 kW in the case of other internal combustion engines, or whose maximum continuous rated power does not exceed 4 kW in the case of electric engines."*

5. It is a widely extended practice to distinguish low- and high-performance motorcycles by complementing the threshold of 125 cm³ with an additional maximum power limit of 11 kW. One example appears in Annex 6 to the 1968 Vienna Convention on Road Traffic, in the context of driving licenses:

"9. Under categories A, B, C, CE, D and DE, domestic legislation may introduce the following subcategories of vehicles for which the driving permit may be valid:

A1. Motorcycles with a cubic capacity not exceeding 125 cm³ and a power not exceeding 11 kW (light motorcycles)"

6. Another relevant example is Annex I to Regulation (EU) No. 168/2013, the European whole vehicle type-approval regulation for L-category vehicles. The EU classification criteria for "low-performance motorcycles" do not only connect the threshold of 125 cm³ and 11 kW but, most importantly, it has resulted in the application for years of 11 kW as the de facto threshold for the approval of electric motorcycles to UN Regulation No. 53:

<i>Sub-categories</i>	<i>Subcategory name</i>	<i>Supplemental sub-classification criteria</i>
<i>L3e-A1</i>	<i>Low-performance motorcycle</i>	(7) <i>engine capacity $\leq 125 \text{ cm}^3$ and</i> (8) <i>maximum continuous rated or net power⁽¹⁾ $\leq 11 \text{ kW}$ and</i> (9) <i>power⁽¹⁾/weight ratio $\leq 0,1 \text{ kW/kg}$.</i>

⁽¹⁾ *The power limits in Annex I are based on maximum continuous rated power for electric propelled vehicles and maximum net power for vehicles propelled with a combustion engine. The weight of a vehicle is considered equal to its mass in running order.*

7. For the sake of simplicity, theoretically, the threshold could be set only by the maximum power regardless of the propulsion method. However, to avoid generating discrepancies with existing legislations all over the world, the cylinder capacity threshold of 125 cm³ should be retained as an additional limit for internal combustion engines.

8. To avoid the proliferation of multiple new series of amendments, at the eighty-sixth session of GRE in April 2022 several stakeholders expressed their preference to merge this proposal with the parallel development of a new 04 series of amendments to UN Regulation No. 53 by the Informal Working Group "Simplification of the Lighting and Light-Signalling Regulations" (IWG SLR). The proposed dates in the transitional provisions correspond to the amendments in this proposal. Once the new 04 series is merged and the overall impact becomes clear, the transitional period may need to be reconsidered.