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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Seventy-third session**

Geneva, 14 – 17 April 2015

Item 6 (b) of the provisional agenda

Regulation No. 48 (Installation of lighting and light-signalling devices) –**Other proposals for amendments to Regulation No. 48****Proposal for Supplements to the 04, 05 and 06 series of amendments to Regulations No. 48 (Installation of lighting and light-signalling devices)****Submitted by the expert from France***

The text reproduced below was prepared by the expert from France to delete a design restrictive requirement on the basis of recent studies by the International Automotive Lighting and Light Signalling Expert Group (GTB). The proposal is based on document ECE/TRANS/WP.29/GRE/2014/34 amended to take into account the comments of the seventy-second session of GRE (ECE/TRANS/WP.29/GRE/72, para. 9). The modifications to the existing text of the 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 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, 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

Paragraph 6.2.9., amend to read:

"6.2.9. Other requirements

The requirements of paragraph 5.5.2. shall not apply to dipped-beam headlamps.

Dipped-beam headlamps with a light source or LED module(s) producing the principal dipped beam and having a total objective luminous flux which exceeds 2,000 lumens shall only be installed in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45.¹¹

With respect to vertical inclination the provisions of paragraph 6.2.6.2.2. above shall not be applied for dipped-beam headlamps:

~~(a) with LED module(s) producing the principal dipped beam, or~~

~~(b)~~ with a light source **or LED module(s)** producing the principal dipped beam and having an objective luminous flux which exceeds 2,000 lumens.

In the case of filament lamps for which more than one test voltage is specified, the objective luminous flux which produces the principal dipped beam, as indicated in the communication form for the type approval of the device, is applied...."

II. Justification

1. The study by GTB following the night test held in Klettwitz, in March 2012 showed that the light source type does not influence the glaring of other road users (see Figures 1 and 2 below, GTB conclusions). Thus, there is no reason to require an automatic levelling device for all headlamps with light emitting diode (LED) light sources, whatever the luminous flux of the light source. This requirement is not needed and costly. The use of automatic levelling devices for all types of LED headlamps is an advancement in the development of this technology.

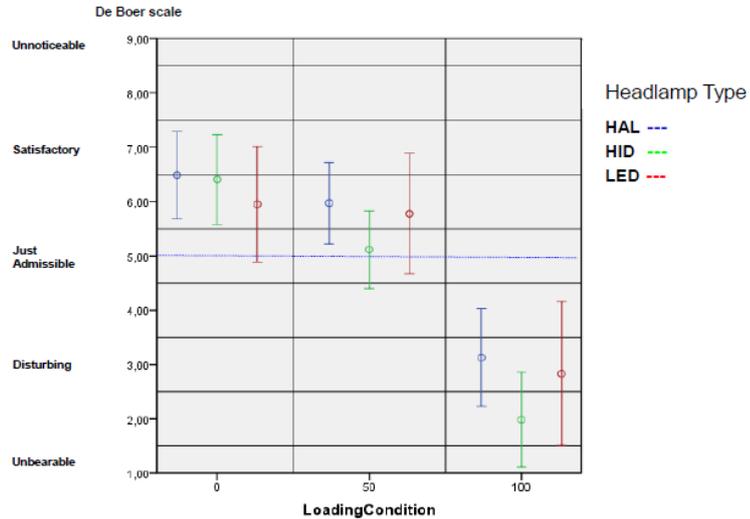
2. The use of LED in automotive lighting should be promoted, as they have several advantages:

- Energy saving: LEDs have a consumption of roughly 30/40W for both headlamps in comparison with 137W for the current technology. According to the technical guidelines of the European Union (EU), it implies a decrease of CO₂ emissions by 1.0 g (based on the data of the EU technical guidelines of February 2013). As a consequence, if this proposal is adopted and the requirement for automatic levelling is the same for LEDs as for the other light source types, in 2020 in Europe, there will be between 2.6 and 5.2 million more cars equipped with LEDs than if the Regulation remains unchanged and, as a consequence, there will be a reduction in CO₂ emissions of between 110,000 and 220,000 tons per year (see Figures 3 and 4 below).
- Additionally, this technology is well adapted to the small urban cars (e.g. electrical engine powered vehicles).
- Reliability: As LEDs have a much higher lifetime than Halogen light sources, the use of LEDs should reduce the number of "blind in one eye" cars on the roads.

3. This document proposes to harmonize the leveling requirements of LED headlamps with the headlamps using other light source types, such as xenon and halogen.

Figure 1. GTB Study (GRE-71-32) of the glare and loading conditions for the different light source types

Results for Halogen, Xenon, LED



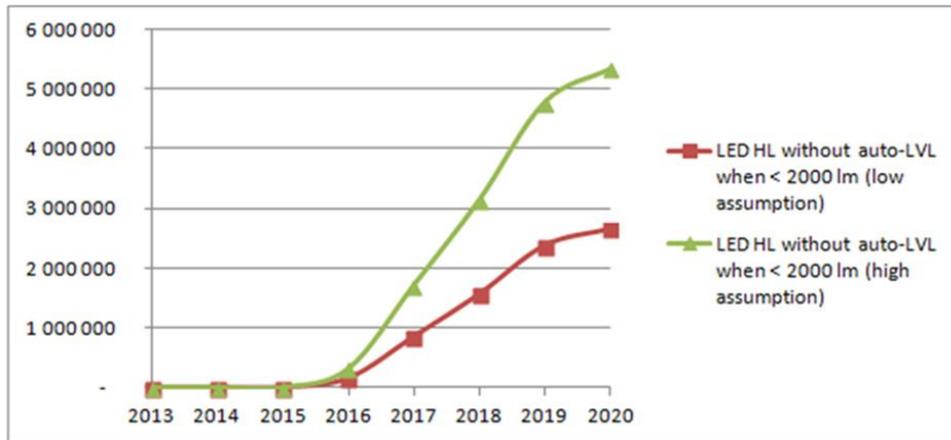
* Width of the bars covers app. 70% of all ratings

Figure 2. GTB conclusions (GRE-71-32)

Summary

- Results of Discomfort Glare and disability glare show clearly, that the behaviour of the vehicle is the important factor for deciding on levelling needs
- Light source is not significantly contributing
- Pitch angle is a qualified parameter for new regulation criteria

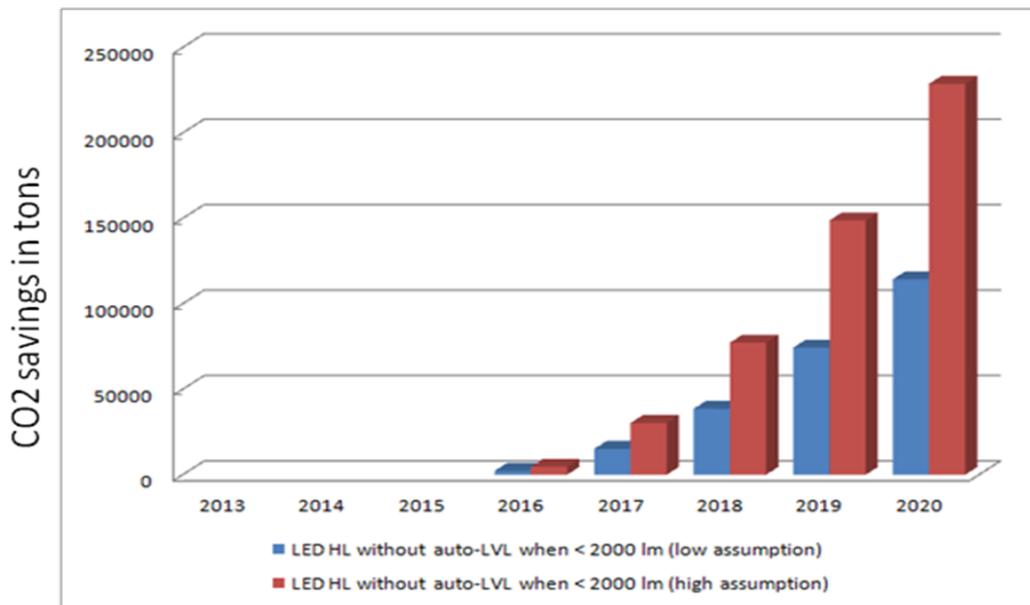
Figure 3. Impact of the proposal on the market of LED headlamps in Europe



Impact of the proposal on the LED equipped vehicles: (Europe + Turkey)

Figure 4. Evaluation of savings on CO₂ emissions generated by the proposal

- Hypothesis:
 - LED headlamps save 1g CO₂ /km.
 - Average mileage : 15000km/year.



Between 110,000 and 220,000 tons of CO₂ saved per year in 2020 in Europe.

Figure 5. No interference of the French proposal with the parallel proposal developed by GTB

