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HARMONIZED PASSING BEAM (DIPPED-BEAM) PATTERN

Transmitted by the Expert from the Working Party "Brussels 1952" (GTB)

Note: The text reproduced below was prepared by GTB as a response to informal document No. 11 submitted by the experts from Germany at the forty-fifth GRE session (TRANS/WP.29/GRE/45, paras. 63-67).

Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

1. BACKGROUND

Discussions in GRE regarding research work and proposals for an improved and preferably harmonized passing beam pattern can be traced back to 1984. At its twenty-fourth session in August 1990 GRE formally requested GTB to prepare proposals on a new passing beam pattern, giving its scientific and industrial expertise in this field (TRANS/SC1/WP.29/GRE/24, para. 26).

In order to deal with this task GTB established the Coordinating Committee (CC), members coming from the fields of industry, standards and research in Europe, the United States of America and Japan. Taking as points of departure a bibliography of 94 papers relating to dipped-beam headlamps and a research study awarded by the CC to the University of Michigan Transportation Research Institute, the CC proceeded to a systematic analysis of the various aspects of passing beam light distribution. This process proved to be difficult and controversial as it was necessary to find a compromise between the United States and Europe concerning standards/regulations, test procedures, conformity of production control systems and industrial practice. The GTB proposal for a harmonized passing beam pattern, together with a rationale explaining the details of the light distribution, was presented at the forty-third GRE session (document TRANS/WP.29/GRE/1999/18). During the discussion at the forty-fourth GRE session it was recognised that the introduction of such a harmonized beam pattern would require all parties concerned to accept some concessions, however, with a guarantee that the resulting specification was good, did not compromise safety, and was accepted world-wide (TRANS/WP.29/GRE/44, para. 59).

2. THE GLARE ISSUE

At the forty-fifth GRE session the experts from Germany submitted informal document No. 11, which addresses the glare-related intensity/illuminance values for the proposed harmonized beam pattern; it is proposed to reduce the illuminance values for certain measuring points, and in Zone III, with respect to the data for the harmonized passing beam.

Control of light above the horizontal was one of the most important aspects in the construction of the harmonized passing beam. As explained in detail in section 4. of document TRANS/WP.29/GRE/1999/18, the values chosen for the relevant test points and zones were carefully evaluated on the basis of research and existing standards/regulations. They constitute the best effort on the part of the GTB CC experts for a compromise which is both reasonable and acceptable and is not detrimental to safety.

From discussions in GRE on the item "glare of headlamps” it has become evident that glare has different causes and consequences. A detailed evaluation of certain aspects of glare, e.g. mis-levelling, dirt on lenses, colour of light, headlamp luminance, can be found in an information paper submitted by GTB at the thirty-ninth GRE session (informal document No. 7). A document on glare factors was submitted by OICA at the fortieth GRE session (informal document No. 5). The influence af actual voltage vs. test voltage has also been discussed; it was noted that future electrical network systems in motor vehicles will allow much narrower voltage limits than today.

It is not contested that there are complaints about glare, in particular from older drivers. At present there seems to be no systematic evaluation of such complaints and their possible causes. Furthermore, there is no research material which would permit to establish a relationship between glare and accident data.

3. THE GTB POSITION

The GTB CC finalized the proposal for a harmonized passing beam pattern after 8 years of discussion. It has been approved by GTB and presented to GRE as the best compromise regarding technical feasibility, market needs, and safety; every detail is the result of lengthy discussions involving many of the best motor vehicle lighting experts in the world.

GTB considers that any modification would seriously endanger this compromise and harmonization as a whole.
